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ABSTRACT

This book is intended to assist in using the Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R) and the Wechsler Intelligence Scale for Children-Third Edition as tools for identifying a child's strengths and weaknesses for the purpose of improving academic and behavioral functioning. The first chapter focuses on using the scales to identify and work with individual learning styles. The following six chapters provide specific suggestions keyed to the Wechsler Scale for Children verbal and performance subtests: information and picture completion, comprehension and picture arrangement, arithmetic and block design, similarities and object assembly, digit span and coding, and symbol search and coding. Graphing Wechsler score patterns to visualize learning styles is the subject of the eighth chapter. The ninth and tenth chapters provide brief descriptions of the subtests of the WPPSI-R and the Wechsler Adult Intelligence Scale-Revised. The importance of verbal and visual matching in language learning is considered in the eleventh chapter. Chapter 12 looks at behavior and learning styles and Chapter 13 considers personality, learning style, and typology. The final chapter presents a mother's recounting of her son's atypical learning style. (Contains 32 references.) (DB)

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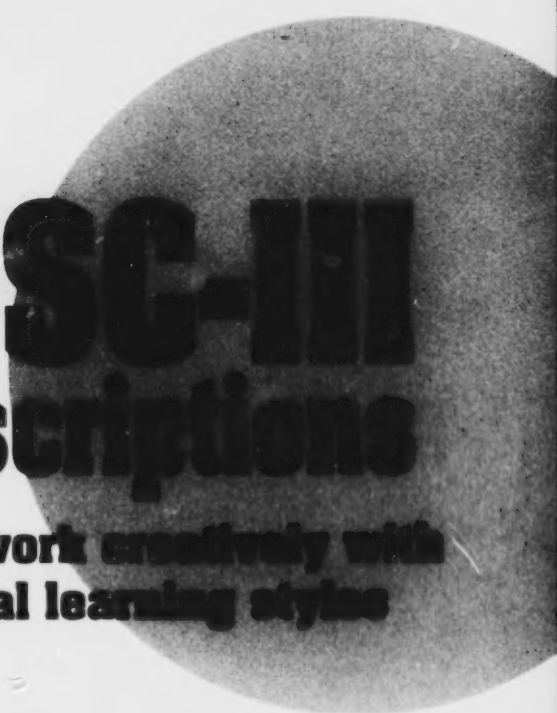
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WISC-III Prescriptions

**how to work creatively with
individual learning styles**

NORMA BANAS MEd

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PREFACE

Over the years, the Wechsler Intelligence Scales, in their original and revised editions, have become one of the best known and most frequently used measures of children's abilities to learn in an academic setting. To the trained eye, a Wechsler profile can reveal much about a child's ability to learn.

The Wechsler manual reminds us that each subtest requires different abilities and that all of these abilities are valued to varying degrees by our culture. Nevertheless, all too frequently, only the Full Scale score, or the average of subtest scores, is used and its use is mainly to classify or label students. At best, Verbal and Nonverbal subtests are averaged and find their way into a child's cumulative record.

Even the addition of an index of Verbal Comprehension, Perceptual Organization, and Freedom from Distractibility with the WISC-III is formed from averages of various subtests. By averaging subtests the obtained index fails to point to significant strengths and weaknesses within each category. The sad result is that these averages of scores may be mistaken for precise indicators of the child's ability to learn. A good question should be, "To learn what?"

The Wechsler manual points out that the individual's drive, motivation, and personality as well as his socio-educational experiences affect his performance. The manual strongly directs the professional to use the Wechsler test as only one source of information in determining ability to learn or when looking at failure to learn. Yet, the Wechsler Full Scale score is often used as the indicator of placement in exceptional children

programs or used as the measure for acceptance in private programs.

Mindful that the Wechsler scores remain cryptic to many regular and special education teachers, this book takes a step-by-step approach to the analysis of the subtests in order to help the user understand that intelligence tests can be useful tools if used in the right way.

This book contains some writings that originally appeared as a column of *Academic Therapy* as well as text from the *WISC-R Prescriptions* book authored by Norma Banas and I.H. Wills in 1978. This book has been updated to reflect the revised Wechsler editions as well as the growth in thinking about intelligence testing and its use.

It is hoped that this update will be as helpful as the previous book in making the "vulnerable child" less vulnerable because of our failure to recognize his unique learning styles.

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INTRODUCTION

Intelligence testing has continued to be the center of controversy even in recent years. Those who criticize intelligence tests give several reasons. First, the results are often used to categorize students. This label then determines their program and may stereotype their progress throughout their school career. It may have a detrimental effect on parental expectations both negatively and positively. The label may prevent, rather than insure, the most appropriate treatment plan.

Secondly, critics point out that intelligence tests are biased in favor of the middle-class white American student. Additionally, theorists point out that there are different intelligences, including musical, social, artistic, and others, and conventional intelligence testing measures limited skills at best. Reality is that most of our curriculum is prepared for an academically oriented population, and we are interested in measuring a student's potential to compete in a school environment.

However, much of the problem with the concept of intelligence testing is with the interpretation of the scores obtained and the use to which the information is put.

Intelligence is often defined as the ability to learn from experiences, and the Wechsler intelligence tests measure retention of information and conceptual ability in relation to presentation in either a verbal or a visual format. Critics point out that the tests do not consider creativity, motivation, problem-solving, and personality which may affect IQ scores either positively or negatively. This could be a valid criticism and further emphasizes the importance in the manner in which results of intelligence tests are evaluated.

It has been generally accepted that genetic (physiological make-up) as well as physical factors set certain limits on an individual's ability.

Emotional sets have an influence on functioning both momentarily and long term. It is also recognized that opportunity to interact with the environment can influence the performance of an individual both positively and negatively. Therefore, we are at best measuring the current ability to learn or function; we are not measuring potential.

For the purposes of this book, the comments have been confined to the Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R) 1989; the Wechsler Intelligence Scale for Children-Third Edition (WISC-III) 1991; and the Wechsler Adult Intelligence Scale-Revised (WAIS-R) 1981. There are many other intelligence tests, but the Wechsler tests are in common use by school and clinical psychologists in educational placement and planning. The Wechsler tests can provide a learning profile. The skills tested are felt to be closely related to school learning. Many of the shorter IQ tests are weighted heavily on vocabulary. Society sees a child who is verbal as bright. However, we all know from watching children in the classroom that there are a multiplicity of factors influencing performance, of which vocabulary is only one small dimension.

The Wechsler scales yield three scores: verbal, performance, and full scale. The WISC-III provides for an index of Freedom from Distractibility, Verbal Comprehension, and Perceptual Organization. Many professionals and parents use only the full scale IQ score as the basis of their decisions regarding a child's ability to handle school or his eligibility for a special program or in estimating grade expectation. However, an IQ score of 100, which is "average," is NOT in itself meaningful for planning or in forming expectations for a student. For example, a full scale score of 100 could be an average of a wide variation among subtest scores ranging from the deficit range to ones in the superior range. One student could have a full scale IQ of 100 with a significant deviation between the verbal and the performance averages. The student with high verbal but low performance scores (still with a full score of 100) would react differently both academically and behaviorally from a student who had the same full scale IQ but whose performance scores were high while his verbal scores were low. In all these cases, there is a likelihood that the day-to-day performance would fluctuate as deficits or strengths are called into use by the teacher's style, type of material being studied, and other miscellaneous events in the environment. Then, again, a student with an average IQ of 100 with an even profile might be expected to work fairly uniformly in an "average" way, but what does that mean in any given class? Additionally, an "average IQ" is too often interpreted to mean the student has no problems; therefore, he can earn A's.

Those who feel that intelligence is inherited would state that intelli-

gence cannot be changed. Intelligence, like physical potential, though a factor of our genetic make-up, does not indicate that an individual is using or tapping his endowed potential (in physical or mental development) for many reasons. What the intelligence test is telling us is the current functioning level of that individual. The current status would be influenced by many factors, such as deficits in attention, vision, hearing, fine motor skills, language retrieval, or from motivational or emotional lability, or from a culturally, educationally, or nutritionally deprived environment. Weak or deficit areas often respond to therapy which, in turn, increases functioning levels. This is not "changing" (inherited) intelligence, but merely removing roadblocks to use of potential.

While this book is directed toward using the Wechsler scales effectively for identifying an individual's strengths and weaknesses for the purpose of improving academic and behavioral functioning, it should be emphasized that the Wechsler test must not be the sole tool for accomplishing this purpose. Teacher and parent observation, medical and school records, and functional (physical) evaluations are valuable and necessary additions to the best interpretation of test records.

Chapter 1

THE IMPORTANCE OF IDENTIFYING LEARNING STYLES

The potential high school dropout rate is a serious problem today. Despite all our "special programs" and test batteries, we are still failing to help many students. Part of our failure is the result of traditional testing methods, which group students by the similarity of their problems. We all too often fail to look closely at the specific patterns and combinations of strengths that balance weaknesses. Programming from test scores does not tell us how or why a student operates as he does. We forget that the way the individual is equipped to receive information and to relate to his environment influences both his behavior and personality pattern and his academic achievement.

When we speak of acceptable behavior, we assume the individual has an adequate and appropriate knowledge of the rules governing interactions with others. We assume that he is equipped to react as we want him to. Yet the same functional and perceptual deficits that affect the student's ability to handle specific academic tasks will affect his response to his environment and direct the way in which he will develop socially and emotionally. In addition, how we respond to him directs his personality and emotional growth.

Each of us learns in his own way; each of us has a pattern of strengths and weaknesses. As adults it is acceptable to say, "Don't tell me, show me," or "I can't work from a recipe; I just feel what to do." Unless a spouse or our job requires that we be adept in our weakness, we can avoid our deficits and get along fine. However, if the student doesn't perform the way we expect him to (according to a prescribed norm) we label

him "not interested," or "lazy," "disabled," "not motivated," or "emotionally disturbed." Note how many labels we have to indicate our belief that "he can do it if he wants to."

There is too large a group of students who have had trouble in school despite measured and obvious intelligence and who are discouraged with school (and school with them) because of repeated pressure from home and school to "try harder." Even with a considerable amount of tutorial help, they are frustrated and either hostile or withdrawn in their response to the suggestion to "try harder." It has long been the practice to send them for psychological help. Tutoring and counseling, however, are like putting a bandaid on a broken arm; they do not work on the source of the problem. These students continue to be given work and are expected to respond in a conventional setting to a prescribed norm with equipment that does not allow them to get the job done adequately. They are then chastised or "put aside" into a special class. Unless the cause of the learning interference is identified and handled, little benefit toward independence in learning will be derived from tutoring or counseling. It is imperative, therefore, that we learn to identify the specific learning modes of these students and the weak intake channels (visual, auditory, motor) that keep them from producing to their intellectual potential.

Personality patterns emerge as truly as the learning pattern, and like the learning pattern, are either supported by or opposed by the environment in which they function. If the student is allowed to operate through his strengths, and his weaknesses are accepted or he is helped to compensate for them, he can flourish and mature. If his environment concentrates on his weaknesses and emphasizes what he cannot do, he may never realize his potential or be content with himself.

This student's school record often shows us a pattern of fluctuation that, at a glance, might be thought proof of his laziness. (He can do well here, why not there?) But on closer inspection it reveals his learning pattern. Math, for example, demands good innate perceptual ability and spatial awareness. Algebra symbols are a new code to be conquered, and geometry requires accurate figure-ground perception and sequential ordering ability. Science, taught with a lab, is concrete and experienced, and tends to be handled far better than social studies, civics, and government, which require visualizing in time and space. One clue to a hidden handicap may be continual comment on report cards that he can do better if he tries harder.

The student who has not been successful with academics may try to be successful with sports only to find that an unrecognized disability—poor body awareness, eye-hand coordination, or rhythm—keeps him from

succeeding here also. His only recourse, then, is to avoid the areas where success is not forthcoming. Restless, frustrated, and nongoal directed, such students often become behavior problems. Their problems have been treated as behavioral, motivational, or emotional, when in fact they should be handled by identifying and treating the factors that are the cause of the behavior.

Intelligence tests such as the Wechsler Scales have been used to attach labels to children who are then pigeon-holed for the remainder of their school participation and treated by a formula that has been set up for the label. As a result, the use of these valuable tools may be lessened and discouraged.

In order to make full use of intelligence tests, subtest scores need to be understood in light of the academic area affected by each. The pattern arising from the strengths and weaknesses, as revealed by the subtests, reliably points to a strong or weak learning mode.

If an analysis of the strengths and weaknesses of the subtest scores is used and related to academic tasks, a pattern of academic strengths and weaknesses can be predicted; and the interfering factors can be better isolated, and channels for learning through strengths identified. It should be noted that with all the performance subtests, poor motor coordination and/or poor visual function would affect the subtest results and could invalidate the test information.

This chapter lists each subtest of the WISC-III, notes what each requires of the child, what factors are involved beside the designated one being measured, and what academics it influences. This is followed with suggested ways for the student to compensate for identified deficits in each area.

Then in each subsequent chapter we will discuss a subtest of the WISC-III and its subtest counterpart from the performance area. We will briefly review the learning skill and related influences tapped by the subtests and then suggest an approach as a means of strengthening the child's learning ability and daily achievement. We urge the reader not to discard the value of such intelligence tests as the WISC-III but to discard the use of intelligence quotient (IQ) figures in favor of knowledgeable analysis of subtest patterns in identifying weak and strong learning avenues.

Subtests of the WISC-III

Information

Measures: long-term memory of factual, isolated data; may be rote knowledge or answered by analysis.

Requires: exposure and educational opportunities, auditory memory, sequential memory, and concepts.

Check: auditory discrimination, auditory memory, and school background.

Influences: test memory for names, dates, spelling, and abstract terms.

Cross check: Picture Completion subtest for knowledge if given in a visual format.

Compensations: testing through multiple choice, teaching with meaningful visual associative clues, and teaching with manipulative experiences.

Considerations: language development and visualization training, auditory memory therapy.

Comprehension

Measures: long-term memory of the "why" of social rules and common sense regarding personal safety and affairs; divided into self and family and society as a whole; may be rote knowledge or answered by analysis of details.

Requires: exposure and experiences, information, and verbal fluency (expressive language), willingness and/or ability to respond to social rules.

Check: emotional status and maturity.

Influences: study of behavioral sciences, civics, government, history, literature, learning from listening and reading.

Cross check: Picture Arrangement subtest for knowledge with a visual format.

Compensations: memorizes well, but must experience to understand.

Considerations: exposure and social experiences with a combined auditory-visual format and part-to-whole perceptual therapy.

Arithmetic

Measures: ability to hold orally presented details and solve orally presented math problems; measures concentration and immediate auditory memory; timed.

Requires: arithmetic concepts, automatic and accurate number-facts recall, immediate auditory memory for details, and language visualization.

Check: emotional status (anxiety factors), and math level at school.

Influences: handling math word problems, learning from lectures, and following oral directions.

Cross check: Block Design subtest and school math achievement testing.

Compensations: teaching with a static visual format, use of associative memory clues, and testing with visual format.

Considerations: language visualization and auditory attention math skills development, and number-facts recall improvement.

Similarities

Measures: knowledge of relationships (concrete, functional, and/or abstract) expressed verbally from verbal clues; may reflect inferential thinking or rote learning.

Requires: experiential and educational opportunities, information regarding the nature and structure of objects, concepts of likeness and differences, and categories or concepts for larger grouping of information.

Check: experiential and educational background and language levels.

Influences: concept formation at all levels, and use of reading and listening as a learning avenue.

Cross check: Picture Arrangement subtest for the ability to conceptualize part-to-whole with a visual format.

Compensations: teaching through pictogramming, learning by rote, and testing of factual data—no essays.

Considerations: language visualization training, and categorization and conceptualization training.

Vocabulary

Measures: word meanings.

Requires: verbal fluency, information, conceptualization, and visualization; influenced by environmental and educational background.

Check: auditory memory, ability to verbalize knowledge, and understanding of questions asked.

Influences: reading and listening comprehension all areas, and ability to communicate in writing or verbally.

Cross check: Peabody Picture Vocabulary Test to compare receptive vocabulary with expressive vocabulary knowledge.

Compensations: use of kinesthetic translation of language, multiple choice testing, and use of charts, diagrams, and pictures in teaching and testing.

Considerations: language visualization training, language memory through an auditory-visual math approach.

Digit Span

Measures: ability to hold and manipulate unrelated auditorially presented digits—first forward, then backward; tests attention and concentration. (Not used in figuring I.Q.)

Requires: immediate auditory memory, sequential memory, visualization ability, and attention.

Check: emotional status (including anxiety factors), and auditory discrimination.

Influences: no subject matter, per se, is affected directly; if severely impaired in Digit Span subtest, all school success would be harder to achieve because of the attention factor.

Cross check: auditory memory for words, auditory memory for sentences.

Compensations: use of visual and visual-motor input while listening (simultaneously).

Considerations: reduce anxiety, provide visualization training.

Picture Completion

Measures: the ability to note pertinent missing details in pictures of familiar objects; requires differentiating between essential and nonessential details; timed.

Requires: knowledge of the objects and their structure or parts, exposure and experience, good visual memory, good figure-ground perception, good visual functional skills.

Check: figure-ground perception, visual function, experiential background.

Influences: detail errors in all academic work.

Cross check: Information subtest.

Compensations: use of pictograms when reading to focus on details; use of color coding, underlining large type, and uncluttered format of work papers.

Considerations: information development program based on visually presented data.

Picture Arrangement

Measures: the ability to place pictures sequentially in causal relationship; timed.

Requires: social awareness, common sense, perception of part-to-whole in logical sequencing, noting of details, background of information, ability to plan and organize work, and visual-motor control.

Check: Ask the child to tell the story of missed sequences to see if stories and arrangement are logical, fanciful, bizarre, lack information, or show emotional content not inherent in the story.

Influences: reading comprehension, listening comprehension, and the use of reading as a learning tool—especially in the social sciences.

Cross check: Similarities subtest. If Similarities score is high, but Picture Arrangement score is low, the child is working by rote and not building information from environment.

Compensations: provide task overviews; provide models and visual aids; ask the questions first, then read for the answers.

Considerations: visual-perceptual therapy of interpreting and organizing the environment visually and making accurate auditory-visual matches.

Block Design

Measures: the ability to analyze and reproduce abstract designs with blocks working from whole-to-part and reconstructing; initially taps ability to perceive from a three-dimensional model, then from a linear model; timed.

Requires: whole-to-part perception, spatial visualization, visual-motor control.

Check: neurological organization and physiological factors.

Influences: math achievement with paper-and-pencil school arithmetic (though the child may be very good with math presented as language); affects transfer from manuscript to cursive writing.

Cross check: Similarities subtest—both are said to indicate the ability to make inferences.

Compensations: use associative-manipulative approach with symbols.

Considerations: visual-perceptual therapy with emphasis on interpretation of abstract designs and their structure.

Object Assembly

Measures: ability to perceive and construct from part-to-whole with single familiar objects in puzzle form; timed.

Requires: visual perception of minimal or nonmeaningful parts, perception of the overview from minimal clues, visual-motor coordination, and visual acuity.

Check: visual function, awareness of structure of objects, and knowledge of the total object pictured.

Influences: ability to use a phonetic analysis approach in learning to read; especially important for first through third grades.

Cross check: reading achievement pattern in school.

Compensations: needs an overview to work to in the form of a meaningful, static visual model; use manipulative, part-to-whole teaching devices.

Considerations: visual-perceptual therapy related to spatial awareness, position-in-space, part-to-whole, and interpretation of the whole from minimal clues.

Coding

Measures: the ability to copy nonmeaningful symbols for familiar pictures (coding A) or digits (coding B); timed.

Requires: eye-hand control, motor speed, short-term visual memory, visual perception for directionality of symbols, good fixation ability for keeping one's place while working, and an understanding of the code concept.

Check: visual function, visual-motor coordination, fatigue, anxiety.

Influences: handwriting and copying at all grade levels.

Cross check: Digit Span subtest for anxiety factor.

Compensations: pointing with finger to keep place, card under the line of type to keep place, large uncluttered format, structured copy work.

Considerations: visual skills therapy.

Mazes

Measures: planning ability and perceptual organization. This is a supplemental subtest and not used in scoring the IQ.

Requires: good eye-hand coordination, organization and planning, attention and concentration, good figure-ground perception. If scored it must be determined whether the deficit is visual-motor or visual-perceptual, organizational, or anxiety based .

Symbol Search

Measures: the ability to identify a form (symbol) from among a set of different forms, some sets which contain and some which do not contain the sample; timed.

Requires: good detail noting ability, visual perception of form constancy and directionality, short-term visual memory, attention and concentration, understanding of search concept.

Check: understanding of task (examiner is not to administer this subtest if the child fails to understand the task), visual function, notably acuity and fixation ability, anxiety, fatigue, and ability to recognize likeness and differences with a symbol format.

Influences: sight vocabulary, decoding skills, copying and handwriting especially as a readiness indicator.

Cross check: Coding subtest for working with nonmeaningful symbols. Frostig Tests of Visual Perception.

Considerations: visual perceptual therapy starting with manipulative target symbol to match over symbols in search group and on to tracing to aid identification.

Chapter II

INFORMATION AND PICTURE COMPLETION

In this chapter we will consider the Information (verbal) and the Picture Completion (performance) subtests for detailed discussion of how to use WISC-III pattern analysis in developing a program of instruction.

Information measures long-term factual memory of data isolation.

Picture Completion measures detail noting of information recognized from a visual format.

I. Diagnosis

- A. If Information is weak* but Picture Completion is average or better than average, check:
 - 1. Educational background
 - 2. Language memory
 - 3. Error analysis (Are errors in sequence, in abstract versus meaningful data, or in distances?)
- B. If Picture Completion is weak, but Information is average or better than average, check:
 - 1. Visual function (Are errors related to lack of information or to inability to focus vision accurately or to hold a focus? If visual skills are poor, refer to visual specialist)

*The terms used throughout this text—"weak," "average," and "better than average"—refer to status as related to the individual's own total profile.

- for in-depth analysis).
- 2. Visual perception (Did he choose another, lesser detail while ignoring, but knowing, the essential element?)
- C. If both Information and Picture Completion are low, check:
 - 1. Experiential background
 - 2. Visual and auditory memory for isolated data. Cross check with the *Detroit Tests of Learning Aptitude* (Baker and Leland 1959).

II. Prescription

- A. If Information is average or better: The student should exhibit good rote abilities and pass weekly factual tests with ease. To tap this strength, be certain that data presented to him are in easy-to-study form, such as lists, and that he knows he is to commit the data to memory.
- B. If Picture Completion is *also* average or better: He should be accurate in visual recognition skills when reading, copying, and doing math problems. He should be good with details and be able to pass weekly tests and do workbook activities accurately. He may, however, be poorer in class discussion and may only be able to write good reports if he copies or reiterates verbatim what he has been taught.
- C. If Information is average or better, but Picture Completion is low: This student should profit from having information fed to him. He is often called unobservant. He is not an incidental learner because he is not visually taking in details accurately. This type of learner should handle material directly and be given a great variety of manipulative aids, such as a letter box, Cuisenaire Rods, puzzles, and so on.
- D. If Information is weak while Picture Completion is average or better: Visual aids should act as an effective boost. Use films, pictures, maps, illustrated texts, and experiential apparatus or experiences. "Learning by doing" is the key.

The author has found great value in using pictures as visual referents for symbol memory during the learning and reinforcement stage (Banas and Wills 1976a). The referents must be static in nature, not flashed or viewed only initially. The picture is to be matched by the child to its language referent (printed word) until, after sufficient exposures for each student, the pictures are removed and the mental image remains when he sees only the symbol referent (word).

"Pictogramming," described in *Prescriptive Teaching: Theory into*

FIGURE 1
Matching Pictures to Language Referents



Learning Stage

Matching symbol (word) and its meaningful visual referent (picture) can be done in a variety of games, such as:

Concentration
Go Fish
Bingo
Old Maid

Instead of matching in the usual manner, cards are matched symbol (word) with visual referent (picture).



Recall Stage

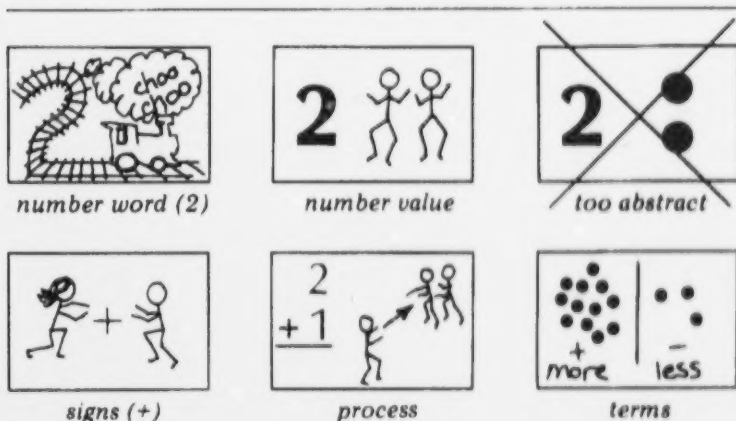
Later, as the child works with words in various contexts, he is able to pull forth in his mind the visual image of its meaning. Thus, he is not only recognizing the symbols, but also interrelating their meaning.

Practice (Banas and Wills 1976a), has been found invaluable in teaching meaning or sight vocabulary to students with poor memory for detail information. Dictionary definitions do not guarantee that the mental image received is accurate. For example, 11 fifth through eighth graders were asked to picture the definition of *absorb*: "to cause to disappear as if by swallowing" (Webster 1959).

Five students showed literal translation by illustrating a person drinking a beverage. (One of these five showed an apple being eaten.) Two showed listeners taking in conversation. Two showed a sponge full of liquid. Two showed the process of condensation and evaporation, one showing *appear* instead of *disappear*, though he verbalized it correctly. The use of a picture referent when new vocabulary was first presented could have made input and memory therefrom accurate.

Effective reading and listening have been reported as being "like having a television in my head." For those who can visualize automatically, reading and listening comprehension are no problem. For those who cannot visualize, the best help we can give is to provide the visual images they need. This is especially true for math, where the symbols of numbers are often less meaningful than the symbols of words.

FIGURE 2
Pictures as Memory Aids



Make input accurate, provide stimuli that can be viewed meaningfully (pictorial or actual form) for as long as needed until their images can be "seen in the mind." With a pictogram approach, many of the recall and comprehension problems of the child who cannot visualize can be dissolved.

Chapter III

COMPREHENSION AND PICTURE ARRANGEMENT

This chapter treats the Comprehension (verbal) and the Picture Arrangement (performance) subtests for detailed discussion of how to use WISC-III pattern analysis in developing a program of instruction.

Comprehension measures common sense and awareness of correct social responses. (Answers may be learned responses or responses arrived at by use of common sense.)

Picture Arrangement measures social awareness with visual stimuli in the form of sequence stories.

I. Diagnosis

- A. If Comprehension is weak, but Picture Arrangement is average or above average, check:
 - 1. Family (Do parents encourage independent thinking and actions? Or does the child prefer to be led?)
 - 2. Auditory perception (interpreting what he learns from listening)
 - 3. Error analysis
 - a. Are errors with common sense?
 - b. Or with information questions?
 - c. Do responses show social aggression?
 - d. Do responses show dependence?

- B. If Picture Arrangement is weak, but Comprehension is average or above average, check:
 - 1. Visual skills, specifically figure-ground discrimination (Does he visually miss details? Does verbalizing help attention to details?)
 - 2. Visual perception, overview (Does he make up a story to fit an incorrect arrangement? Does he have the concept at all?)
- C. If both Comprehension and Picture Arrangement are low, check:
 - 1. Experiential background
 - 2. Does he lack the basic information needed to draw the conclusion expected?)

II. Prescription

- A. If Comprehension is average or above average, the student should be seen as socially effective and verbally bright outside the classroom setting. This area of strength suggests good ability to learn from experiencing meaningful, cause-effect situations. To tap this strength, relate new (academic or social) content to the student's personal background of experience and knowledge. (Repetition needed to insure recall will vary from student to student.)
- B. If Picture Arrangement is *also* average or above average, the student should be able to use reading and language as learning tools. (Comprehension would be limited only by any inability to read the words.) This student learns by observation of meaningful interactions of others and can see cause-effect relationships, both from visual and from language clues. Tap his strength with material taught in a contextual setting, as opposed to lists, terms, or concepts to be learned in isolation.
- C. If Comprehension is average or better, but Picture Arrangement is low, the student is not an incidental learner. He may appear to be attending yet may not be taking in details of happenings from visual observation. Therefore, he needs to have the overview presented to him *before* he can work effectively with the data (details). Give him the questions before he reads; give him the outcome, then show him how the conclusion was reached; give him the "whys," then

the details. Take him physically through an activity or experience as it is being discussed or studied.

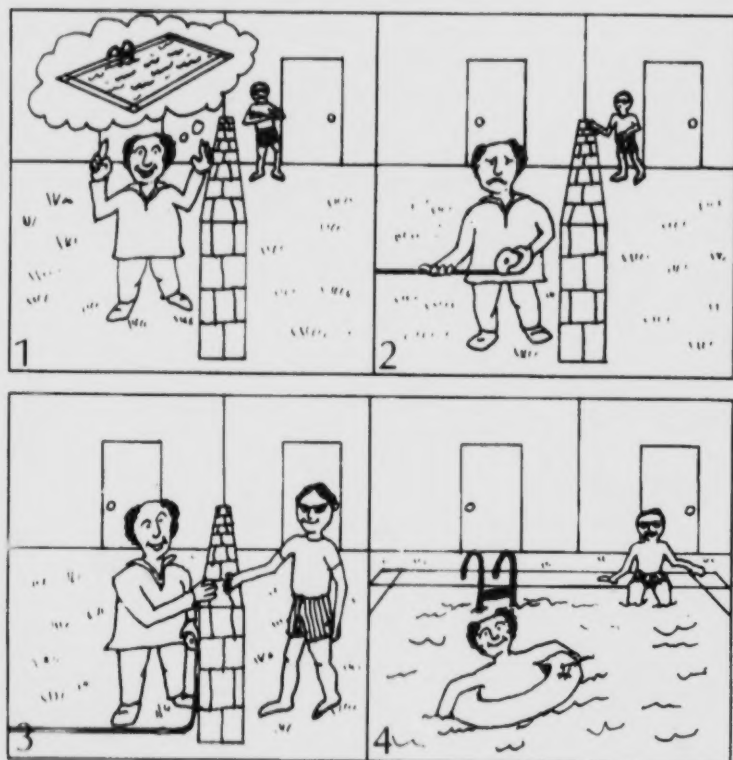
- D. If Comprehension is weak, but Picture Arrangement is average or above average, he is probably not learning from being told or from reading about a situation, or he has a very limited experiential background. History, civics, government, and literature are usually difficult subjects or are learned by rote to be quickly forgotten. Teach with a visual format. Use visitations, observations, and films. Do a lot of demonstration teaching and playacting. Have the student use manipulative materials and conduct experiments. Put him in laboratory courses instead of lecture courses.

One valuable aid has been the use of sequence stories in developing social awareness, improving informational background, and teaching cause-effect awareness (Banas and Wills 1976a).

Sequence Stories

Sequence stories can be made from the Sunday cartoon section of the newspaper. Materials: Preferred cartoons are those that rely on observation of the viewed actions rather than on words. (Mark through any words so that the student must visually analyze what he sees.) Cartoons chosen should be pasted onto cardboard, covered with clear contact paper, then cut into their individual frames. The frames must provide sufficient clues to their sequencing for the cartoon to be of value in this activity. Procedure: Place the frames before the student in random form. Ask, "What do you think this story is about? (Can you give it a title?)" Once the overview (title) or main idea is established, allow the student to place each picture into the sequential order that tells the story. Ask him to explain the story in the following way: "The first picture (in the series) tells me that _____ (action) _____; the last picture tells me that _____ (summarization) _____, because _____ (reason is seen in midaction scenes) _____."

FIGURE 3
A Sequence Story



Picture 1: "The man is thinking about getting a swimming pool."

Picture 4: "The pool is built in his yard and his neighbor's . . ."

Summarizing midsection (pictures 2, 3): " . . . because his yard isn't big enough."

Chapter IV

ARITHMETIC AND BLOCK DESIGN

This chapter treats the Arithmetic (verbal) and the Block Design (performance) subtests of the WISC-III and discusses how to use pattern analysis in developing a program of instruction.

Arithmetic measures the ability to hold orally presented details while solving language (word) problems. Stated objectives are to measure concentration and to determine whether arithmetic concepts and number-facts recall are available at the expected level (timed).

Block Design measures the ability to analyze and reproduce abstract designs. Must translate a three-dimensional, then a linear, two-dimensional model, and reproduce it in a three-dimensional construct (timed).

I. Diagnosis

- A. If Arithmetic is weak, but Block Design is average or above average, check:
 - 1. Math level
 - a. Child should have math skills for his age expectancy or test reflects math level, not concentration.
 - b. If good at paper and pencil math test, while poor on WISC-III Arithmetic subtest, language visualization or language retention should be checked.

2. Auditory memory for details
3. Error analysis
 - a. Can he hold the data? (auditory memory)
 - b. Does he know number facts? (rote memory)
 - c. Does he know the process? (sequencing)
 - d. Is timing a factor? (anxiety)
 - e. Can he handle the reading problems?
4. Anxiety factor—is Digit Span exceptionally low?
- B. If Block Design is weak, but Arithmetic is average or above average, check:
 1. Visual skills
 2. Error analysis:
 - a. Timing factor? (anxiety)
 - b. Does he knock over his work? (motor)
 - c. Reversals and transpositions? (directionality)
 - d. Concept of how the parts make the whole? (perception)
 - e. Can he copy from a three-dimensional, but not from linear model? (perception)
 3. Are writing skills poor, especially cursive?
 4. Is there a neurological factor involved? (minimal neurological dysfunction syndrome)

II. Prescription

- A. If Arithmetic is average or above average, the student should be good with math presented in language form and have good power of concentration for verbal presentation. He may or may not achieve well with paper and pencil math tasks. To tap this strength, teach math by presenting the concepts in meaningful, verbal situations. Relate symbols or abstracts to stories of real situations.
- B. If Block Design is also average or above average, the student should have no difficulty learning math (assuming good educational opportunities) and should be able to learn from maps, charts, graphs, and diagrams. Laboratory sciences, architecture, and machinery should be easy to handle. This student learns from a static model, and should be provided a lot of manipulative visual aids to help him "see" relationships, processes, and structures of what he is studying.

- C. If Arithmetic is average or above average, but Block Design is weak, the student does not learn from visual presentation that is made up of abstract symbols (as a map, handwriting, spelling, punctuation, and math, especially geometry). His errors in math and in most written work may be mistakenly called "careless" because he can often correct them with directed attention. To avoid this problem, he needs to be encouraged to do written work in rough draft form, have someone check for errors, then do a finished product. Verbalizing (softly, but aloud) is, however, the most effective aid in reducing errors, as it taps into the stronger verbal learning pathway. Verbalizing can be used to reduce errors when reading for details, when doing math papers, when doing all copy and written work, and when trying to analyze a visual presentation.
- D. If Arithmetic is weak, but Block Design is average or above average, the student needs a static model with which to work. Detail memory for what he hears (or reads) is usually poor, but his ability to see relationships is good. He may have adequate math concepts, yet fail tests because number-facts recall is poor. For this student, a calculator would be a boon and would allow him to do higher-level math work, even if he is never good at rote facts recall. This student's work may be characterized by erasures and rework, as he has to "see," to know if he is correct. He may be a poor speller, yet he can recognize an error and choose a correct response when he sees it in written form. Copywork (writing or drawing) is usually adequate, though recall may be weaker; thus he should also work from a model instead of from memory, and erasures and rework should not be criticized. Typing his work can often change the picture and reduce initial errors significantly.

Chapter V

SIMILARITIES AND OBJECT ASSEMBLY

In this chapter the Similarities (verbal) and the Object Assembly (performance) subtests of the WISC-III are discussed to show how to use pattern analysis in choosing instructional approaches.

Similarities measures the ability to conceptualize by asking the child to find relationships between words (concepts). There is no visual clue; therefore, the ability to visualize from language is needed. The quality of the answers will reveal if the relationships seen by the student are concrete, functional, and/or abstract. The ability to handle this subtest depends upon a good experiential and/or educational background.

Object Assembly utilizes a puzzle format to measure part-to-whole conceptual ability. Present each puzzle, a single familiar object, with the pieces arranged in a specific layout. Tell the viewer (on the first two of four) what the object will be. He must then recognize, from minimal visual clues, the correct relationship of the parts (timed).

1. Diagnosis

- A. If Similarities is weak, while Object Assembly is average or above average, check:
 - 1. Educational background
 - 2. Can he visualize from language? Show him pictures of the pairs he missed. If he can now see the relationships,

it is not the concept that is missing, but the ability to work from language.

3. Check awareness of his environment

- a. Does he miss a lot of what happens around him?
- b. Does he ask "why" about things? Or does he show a lack of inquisitiveness?

B. If Object Assembly is weak, while Similarities is average or above average, check:

1. Visual skills
2. Timing factor (anxiety)
3. Error analysis:
 - a. Reverses pieces (directionality)
 - b. Can he recognize that it will be a car, a face, etc. before completed? (gesalt perception)
 - c. Can he recognize pieces from minimal clues? (perception)
 - d. Does he knock pieces out of place as he works? (eye-motor)

II. Prescription

- A. If Similarities is average or above average, the student should be seen as a good conversationalist (unless an emotional factor interferes), be reading meaningfully (even if oral reading accuracy is poor), and would be described as "bright" by his teachers and friends (regardless of actual grade achievement).

This child does not necessarily get good grades. To have good grades he would also have to have a good memory (check Information subtest). Too many academic measures require detail memorization and recall of data in isolation. This student would be expected, however, to do well on essay exams and oral presentations. His daily classroom participation and special assignments would be generally better than test performance, with the exception of standardized schoolwide and national tests on which good "guessing" (use of inferential ability) can increase scores.

- B. If Object Assembly is also average or above average, the student would be expected to be a good reader, have good word attack skills, and do generally well in all language arts areas. He is able to see relationships, both with language

and with visual analysis related to a phonics approach. Memory for isolated facts may or may not be good (see Information subtest); thus, it is best to teach this type of student concepts and rules in context, not rote facts in isolation. Give him an overview to work to and let him experiment manipulatively. He should be particularly good in laboratory sciences, legal and medical careers.

- C. If Similarities is average or above average, but Object Assembly is weak, this child will usually not be good with a phonetic analysis approach. A severe weakness in Object Assembly would advise us to avoid, totally, the phonetic approach. Instead, a language approach which would tap his strengths in Similarities would be the method of choice.

There are many ways to use a language approach, but all will be based on the assumption that we "see" a visual image of the meaning implied by the written word, as opposed to reading as an auditory and visual decoding process. In its simplest form, this would imply teaching by the "whole word approach." The whole word approach or the sight vocabulary recognition approach may not work, however, if:

1. There is an impairment in vision affecting consistent, accurate, and rapid fixation skills.
2. Visual memory for symbols is weak. To check this, you can administer the *Detroit Tests of Learning Aptitude* (Baker and Leland 1959), subtests No. 9, Visual Attention Span for Objects, and No. 13, Visual Attention Span for Letters. If visual memory for objects is high, while visual memory for letters is low, we confirm that symbol memory is poor, but visual memory for meaningful visual presentation is intact.

An effective approach, then, to utilizing this child's language strength, while bypassing any visual memory weakness is the word/object or picture matching approach.

Concentration

The game *Concentration*, can be tailored for individual learning needs. Cut 3" x 5" file cards in half. Print the word to be learned on one half. On the other half, draw or paste a picture illustrating the meaning of

the word. With these cards joined, make some symbol (as shown in Figure 4), which will act as a correction code when the child correctly pairs a word and picture. Each game should be played with a set of ten words and their ten matching pictures, twenty cards in all. Cards should be shuffled, then laid face down in the middle of the playing table in rows of five each (see Figure 5). Each player, in turn, turns over one card, says what is on its

FIGURE 4
Cards for Concentration

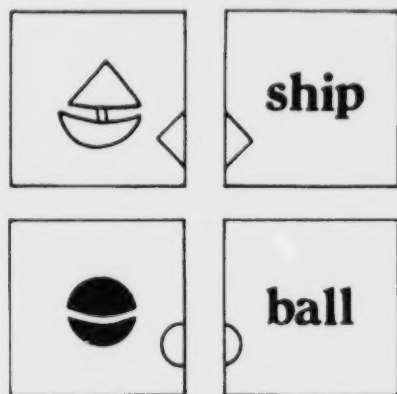
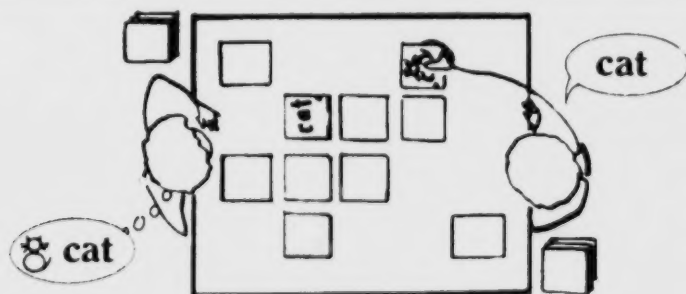


FIGURE 5
Playing Concentration



face, and tries to turn over a card to make a pair. If he makes a pair, he keeps it, and it is the next player's turn. If he does not find a match, players turn the cards face down again, and the next player gets a chance. Continue until all of the pairs are found. Young children enjoy taking this game home and playing with a parent or older sibling.

Other game-type techniques can be found in *New Approaches to Success in the Classroom* (Banas and Wills 1976b).

Chapter VI

DIGIT SPAN AND CODING

This chapter treats the Digit Span (Verbal) and the Coding (Performance) subtests for detailed discussion of how to use pattern analysis in choosing instructional approaches.

Digit Span measures the ability to hold and to manipulate auditorily presented digits—first forward, then backward. This subtest requires the ability to attend and to concentrate on auditory stimuli. It is considered an indicator of anxiety, for immediate auditory memory is usually blocked if anxiety is high.

Coding requires the student to copy nonmeaningful symbols in a box under asequential digits 1 through 9. A sample code is presented, and the task is timed. This task taps eye-hand control, motor speed, short-term visual memory, visual perception for directionality of symbols, good visual function (fixation), and understanding of the coding concept. Anxiety is also felt to have a detrimental effect on this subtest.

I. Diagnosis

- A. If Digit Span is weak while Coding is average or above average, check:

1. Emotional status (anxiety)
 - a. At this moment:
 - i. Is he distractible?
 - ii. Is he hyperactive?
 - iii. Is he attending?
 - b. Regarding auditory presentation in general versus response or ease with manipulative or visual presentation.
2. Amount held in forward versus backward presentations (attention/concentration)
 - a. If better forward, ability to hold digits is available, but manipulating details causes loss of memory.
 - b. If better backward, concentration is probably being increased by noted difficulty of the task (focusing attention).
- B. If Coding is weak while Digit Span is average or above average, check:
 1. Eye-motor speed and control
 2. Visual function (fixation ability)
 3. Understanding of coding process
 4. Error analysis:
 - a. Are symbols reversed? (directionality)
 - b. Are symbols wrong? (perception)
 - c. Is the amount done minimal, but work accurate? (memory or anxiety)

I. Prescription

- A. If Digit Span is average or above average, the student shows good ability to concentrate on oral presentation. This does not, however, indicate anything about long-term memory for isolated data (check Information subtest).

It has been found that a student who demonstrates good results in Digit Span can increase attention, intake accuracy, and immediate recall by giving himself a verbal boost. Thus, encourage him to verbalize (quietly, but aloud to himself) as he works.

- B. If Coding is average or above average, the student should be able to handle copying tasks and typing. The use of key cards (Banas and Wills 1976a) and other simple static visual models would be of value for accurate intake of new data

and assignments.

- C. If Digit Span and Coding are both weak, but all other subtests are average or above average, it is generally concluded that anxiety is blocking concentration for accurate, rapid automatic responses. In the classroom this student might know his material, but would freeze on timed tests or be so slow that his score would be negatively affected.

Scores on tests and papers which have much detail work should be carefully checked to see if a low score resulted from a small number of items completed, rather than from lack of knowledge. If so, either reduce the amount of work or do not time the test.

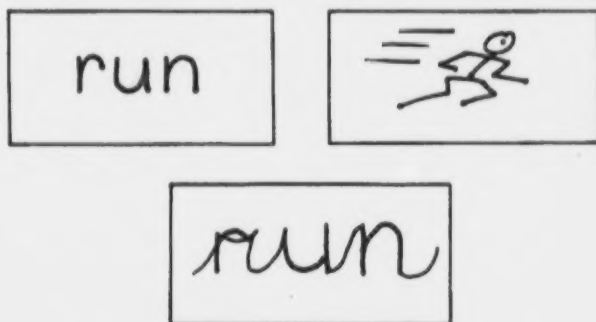
- D. If Digit Span is weak, do not give the student instructions orally or present lists for him to memorize. All instruction should be presented while the pupil is handling the material under discussion or looking at a meaningful visual format; or instructions should be in written form. Check the student's *Detroit Tests of Learning Aptitude* (Baker and Leland 1959) results for subtest No. 6, Auditory Attention Span for Unrelated Words, to see if low Digit Span relates only to digits; or is auditory memory poor even when words are used? Also, check subtest No. 13, Auditory Attention Span for Related Syllables, to see if the student can hold auditory presentation when it is a fully meaningful sentence as opposed to unrelated items.
- E. If Coding is weak, the kina-writing method has been valuable in developing better eye-hand coordination, visual perception of details, and visual and motor memory for symbols and vocabulary (Banas and Wills 1976a).

Kina-Writing

For this activity, use strips of white tagboard, $4\frac{1}{2}$ by 11 inches. These will become the kina-cards. Then, take words from any book in which the child is working and which may need recall reinforcement.

Copy each word, one word to a kina-card, in pencil. Proper and exaggerated spatial relations are needed to fully involve the child kines-thetically and to heighten his perception of the word configuration. (Copy about five words per lesson.)

FIGURE 6
Kina-Cards



Draw a picture on the back of each card to illustrate the meaning of the word.

Connect each letter, using the crayon, so the finished work appears in cursive form. The following instructions are suggested when introducing the connective step. Say to the students, "Swing up to where the letter begins when you print...make your letter as always, swing up to the next letter...," etc.

Note that it is often necessary to correct the child's directionality by placing an arrow to remind him that all letters move from left to right as they are formed, and that we begin at the top of each letter. Segmenting manuscript letters is detrimental to the child with directional or eye-hand coordination problems.

At first, avoid words containing an *r*, *s*, *f*, or *z*. These are the only letters which change from the printed form.

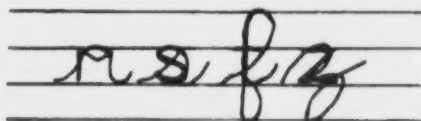
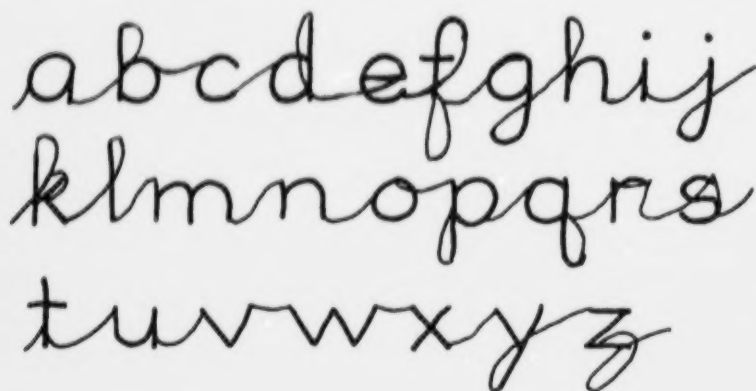


FIGURE 7
Cursive Form for Kina-Writing



Trace a word three times with the crayon as the student says the word quietly, but aloud. (Be sure the student keeps his arm from resting on the table. Freedom of movement, as well as large movements, are important.) Have the student write the word on the chalkboard with eyes closed. Ask him to check the model and retrace if letter information is incorrect. Do each word in turn.

Chapter VII

SYMBOL SEARCH AND CODING

This chapter looks at Symbol Search and Coding subtests as they are paired by the WISC-III as tests of processing speed and relate to the concept of freedom from distractibility.

Symbol Search measures the ability to identify the presence or absence of a symbol from among a group of symbols. This is a timed subtest that requires attention and concentration, good short-term memory, the ability to note details and to show good visual perception for likeness and differences and an understanding of the search task.

Coding requires the student to copy nonmeaningful symbols in a box under a sequential digits 1 through 9. A sample code is presented, and the task is timed. This task taps eye-hand control, motor speed, short term visual memory, visual perception for directionality of symbols, good visual function (fixation), and understanding of the coding concept. Anxiety is felt to have a detrimental effect on this subtest.

I. Diagnosis

- A. If weak in both subtests, check:
 - 1. Understanding of the tasks
 - 2. Attention
 - 3. Anxiety (affecting attention and timing)
 - 4. Visual function (acuity and fixation ability)

5. Error analysis:
 - a. Is work correct but number completed minimal? (speed not perception)
 - b. Are errors throughout without consistency? (attention or perception)
- B. If symbol search is weak while coding is average or above average, check:
 1. Ability to note likeness and differences of form
 2. Problem with multiple vs. simple presentation
 3. Figure-ground perception
 4. Form constancy
 5. Error analysis:
 - a. Has he answered "yes" "no" randomly?
 - b. Are errors directional?
 - c. Are errors random? (attention)

II. Prescription

- A. If above average in both subtests, child is showing good attention, memory, and perception for symbols *where there is a model from which to work*. This does *not* indicate anything about long-term memory for symbols. In the classroom, does he know his work one minute and forget the next? If short-term memory is good but long-term memory is poor, check for physical or medical factors and refer to the appropriate professional for therapy.
 If no physical or medical factors, what is his attitude toward the work? If he is uptight, overanxious, or indifferent, he may be blocking integration of material into long-term memory. Make the tasks *fun*; try games especially for speed, grade for number correct, not incorrect, provide success by making sure the work is simple or by reducing the amount until he can find the work rewarding, then increase slowly in difficulty and amount. Praise! Praise! Praise!
- B. If he points as he works he is aiding attention or visual focus. If so, check visual functions and refer to a specialist in visual skills therapy. In the meantime, encourage and allow him to point or use a marker as he reads or copies. Boxing off math problems may decrease the so-called "careless errors." Be sure material is clear and bold and uncluttered in format.

No light purple spiritmasters.

- C. If he verbalizes as he works, allow him to subvocalize as he reads or copies. The verbal boost may be adding a needed language channel to the visual channel. The child may do better with many things if he can talk his way through the material.
- D. If poor with Symbol Search or Coding and visual functioning is adequate, try tracing, color coding, verbalizing and manipulative pieces. Isolate each problem or pattern and slowly increase complexity of material and format. With success with any of these approaches, you have a key to teaching him to work with symbols in the classroom.

Chapter VIII

VISUALIZATION OF LEARNING STYLES

Two subtests of the WISC-III, Mazes and Vocabulary, have not been treated in our discussions of prescriptive programing. *Mazes* is designed to measure planning ability and perceptual organization. The scoring of the Mazes subtest has been changed significantly from the old form to the revised form. In the past, motor errors were scored as well as perceptual errors. In the WISC-III, Mazes is a supplemental test; and the score, if given, is not included statistically in measuring the performance IQ.

The other subtest not discussed is Vocabulary. Vocabulary has long been the basis of measuring intelligence (the *Stanford Binet Intelligence Scale* [1960] uses vocabulary as the starting point for measuring intellectual levels), and teachers and parents have long made estimates of children's ability by the quality and quantity of their vocabulary. It has been our experience that this subtest can be a measure of memory and not a measure of learning ability. For another thing, it is influenced by exposure and background, and therefore biased for many groups. Also, regardless of exposure, a child with poor memory might do poorly on a vocabulary test, yet may have excellent conceptual ability (Wills 1969). There are children who are excellent memorizers and have a large speaking vocabulary, yet are not good at reasoning for themselves or learning from reading (Wills and Banas 1971). Also, there are children who understand language and measure at level on the *Peabody Picture Vocabulary Test* (1965), but their ability to put ideas into words is poor (Vocabulary subtest on the WISC-III is low).

The child with poor language perception may attach vague and

inaccurate meanings to new words. He uses big words and even defines them apparently correctly; yet he is unaware that he does not really have full or accurate concepts.

We have noted that the Vocabulary subtest does not consistently fall into any pattern with other subtest scores and/or a particular learning problem. Therefore, it is not used by us for predictive or prescriptive purposes.

The Wechsler tests are now designed to be plotted on a graph similar to the one in Figure 8, page 51. A visual study of the pattern of strengths and weaknesses is a key to identifying problems and suggesting potential remedial methods that may bypass the problems by tapping strengths. It also helps identify the type of learner, something not possible to do from the Full Scale or averaged test scores.

Figure 9 is a summary of the basic factors presented in Chapters II through VII. It shows how Verbal and Performance subtests are related and shows how a basic skill or learning style is checked in both the auditory and the visual channels. Thus, we can quickly see if a child is low in memory, both with verbal and with visual presentation (low Information and Picture Completion), or if he is poor in memory only when given data verbally, but good when seeing it (low Information, high Picture Completion).

Let us again suggest caution regarding the need to check functional and emotional factors which could produce low scores on WISC-III subtests. For example, functional vision (how the eyes work together) would have a significant influence on the performance skills, especially Coding. Each of the previous chapters contains specific factors to check.

Test-pattern analysis of the WISC-III is a technique that is now used by many knowledgeable diagnosticians and can be used along with a good academic check to plan meaningful remedial programs for the learning-disabled child. Four of the patterns that have been substantiated through the empirical approach and in correlation with results from complete diagnostic workups are illustrated in Figure 10, page 54.

Pattern 1, that of the so-called normal or average child, can be used as a point of reference. An interest scatter of 20 points is considered a normal fluctuation of strengths and weaknesses. (Each increment in Figure 1 represents 10 scaled score points.)

Pattern 2 is that of the Vulnerable Child, the dyslexic who has trouble with the use of symbols, but has strength with meaningful material (Wills 1969). He often says of himself, "I can think but cannot do." His good thinking skills, as seen in his high Similarities and Block Design scores, are limited by the inability to hold unrelated stimuli, as in

FIGURE 8 **Intelligence Evaluation**

Wechsler Intelligence Scale for Children—III

Name _____ Birthdate _____ C.A. _____

Grade _____ Test Date _____ Ex. _____

<i>Verbal</i>	<i>Performance</i>
Information _____	Picture Completion _____
Comprehension _____	Picture Arrangement _____
Arithmetic _____	Block Design _____
Similarities _____	Object Assembly _____
Vocabulary _____	Coding _____
Digit Span _____	Mazes _____
	Symbol Search _____

Full Scale IQ: _____

Verbal IQ: _____ Performance IQ: _____

Int Comp Arith Sim Voc DS PC PA BD OA Cod Mazes SS

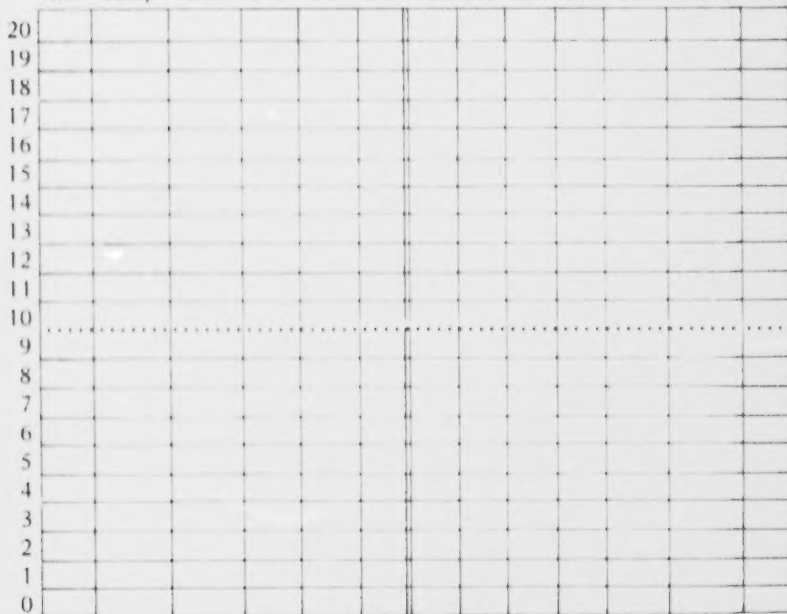


FIGURE 9
Summary of Factors

Wechsler Intelligence Scale for Children—III
Basic Correlations between Verbal and Performance Subtests

	Information	Comprehension	Arithmetic	Similarities	Vocabulary	Digit Span
Verbal subtests (auditory)	memory for isolated data affected by experience	social awareness (common sense (concepts)	visualization part-to-whole	conceptualization inferential thinking		auditory memory
Performance subtests (visual)	Picture Completion	Picture Arrangement	Block Design	Object Assembly	Mazes	visual memory visual- motor form constancy Coding Symbol Search

Information and Picture Completion, for example. He also has trouble translating symbols quickly enough to use them automatically, as in Coding.

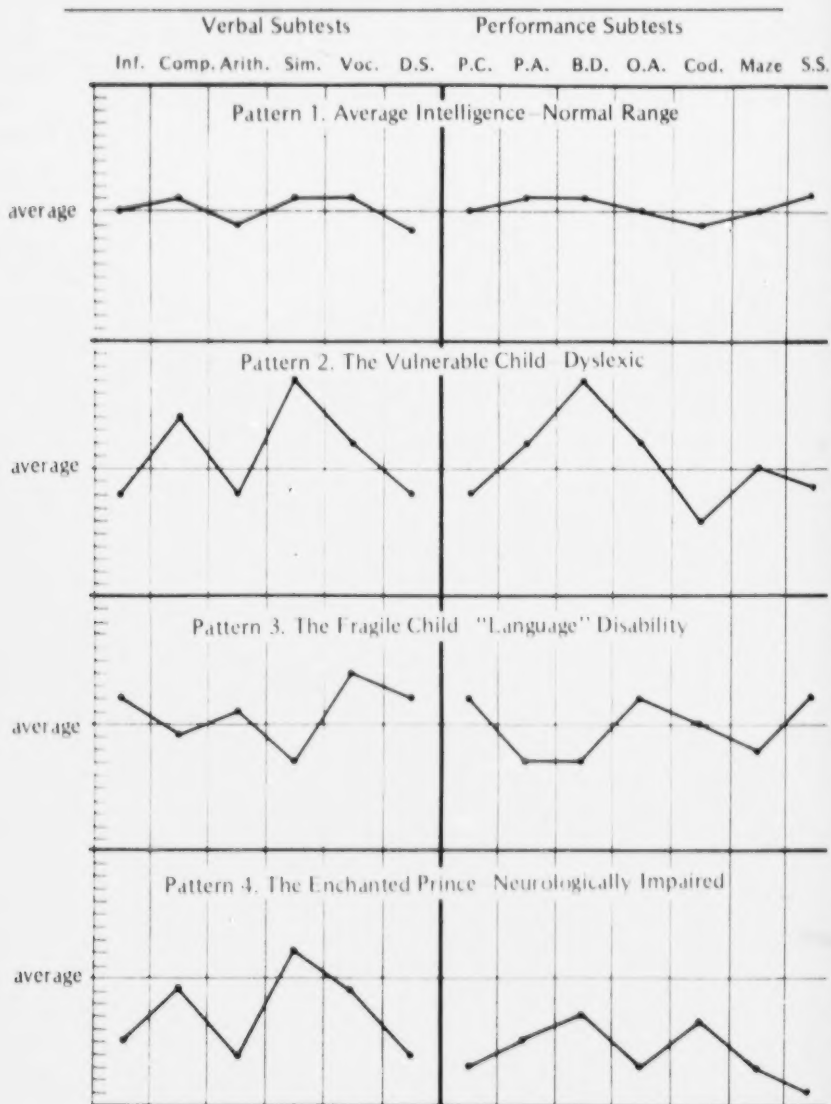
Pattern 3, the Fragile Child, for whom language usage appears as a problem, shows a pattern that is opposite of the highly verbal dyslexic (Wills and Banas 1971). This pattern seems to occur more often with girls than with boys, and it has been described as a language disability. However, the parents of such a child say, "She has an excellent vocabulary." Indeed, the WISC-III verifies this fact. Why, then, is she having difficulty following directions, handling reports, or learning from reading? Though she may have a large vocabulary, she may not be using language effectively. A basis for this language confusion could be inadequate visualization from nonstatic stimuli, which especially affects the area of language organization. Further, an auditory-visual mismatch may result from a visual-perceptual deficit, which, in turn, causes inaccurate visualizations. This deficiency results in language errors of sequence, such as *shake milk* for *milkshake*, and errors of recall, such as *peas* for *beans*, and these problems lead to anxiety. Her strength is with material that is learned by rote. Her thinking skills are limited by the inability to organize her data (see Chapter IX).

Pattern 4 is the Enchanted Prince, the neurologically involved child whose intellectual potential is masked by interference in intake in all the pathways due to a minimal neurological dysfunction (Wills and Banas 1970). This child has often been misdiagnosed as a retardate because of his inability to handle academic skills. His thinking strength is hidden under the mask of the dysfunction.

There are deviations in these basic patterns that are indicative of interfering factors. For example, it has been found that the dyslexic pattern may be present, but that depression of the entire verbal area can result from an emotional reaction to frustration. A close check of pattern and the performance scales, with its high Block Design, can point to the fact that this child is not neurologically deficient or a slow learner.

When the verbal pattern is considerably higher than the performance scale, the child's poor small-motor controls may be causing him to lose credit as he constantly makes a mess of the work by bumping the puzzles with his fingers or dropping pieces, as he struggles with his inability to make symbols correctly, and as he continues to erase or rework. All of these time-consuming factors may interfere with his ability to finish assignments in class and may be the cause of papers being returned to him with "do over" and "try harder" noted on them. His mother says, "He can trip over a piece of dust."

FIGURE 10
Patterns of WISC-III Interest Scores



How can an educator use this type of pattern analysis to set up a remedial program? First, the open pathway, the child's strength, should be used for effective intake of stimuli. The accuracy of storing and output depends upon the accuracy and strength of intake. When a child has no pathway interference, it is properly said, "He'll learn in spite of the approach taken."

With the Vulnerable Child, however, the approach must be through meaningful associations boosted by visually static clues. He must *see to do*. Writing is often messy, spelling is poor, but reading is good because he works on a recognition level. A strong associative approach is a significant aid to effective recall and speed.

With the Fragile Child, too much verbiage, even in written form, may be confusing; a nonverbal demonstration of what is wanted can be the key to success. She learns by rote; thus, she usually shines in memory subjects but cannot organize work effectively, especially in content area subjects. If a structured work environment is provided, she may find it much easier to use her rote-learned data.

The Enchanted Prince needs a completely manipulative associative program with a great deal of three-dimensional aids and color coding to help him note shifts in detail. This process is much slower and his growth is also slower. Medical therapy has also contributed to strengthening attention and memory for these children.

Of course, there are parts of each pattern that may be identified with any child, and the pattern may not be clear-cut since it may be affected by a splinter skill or a focal point of disability. But the overall patterns are proving to be important in establishing prescriptive programs; they provide a strong base for developing the sequence of training and for determining the open pathways in the general learning process.

Chapter IX

WECHSLER PRESCHOOL AND PRIMARY SCALE OF INTELLIGENCE (WPPSI-R)

The Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R) was revised in 1989 and continues to provide a downward form of the WISC-III to act as an appraisal of the abilities of the preschool child. The revised form ranges from age 3 years through 7 years 3 months. There is a one year overlap where either the WPPSI-R or the WISC-III can be used. In the overlapping age range, we have usually chosen the WISC-III, since the performance tasks on the WISC-III are felt to be more closely related to the academic tasks required at this age.

The revised WPPSI consists of more colorful and appealing materials and a new performance subtest, Object Assembly. Animal House has been renamed Animal Pegs.

The Verbal Scale of the WPPSI-R and the WISC-III provide five of the same subtests. The sixth subtest, immediate auditory recall, differs in that the WPPSI-R uses repetition of phrases and sentences of increasing length, while the WISC-III uses repetition of digits forward and backward.

The Performance Scale of the WPPSI-R and the WISC-III provide four similar subtests (picture completion, mazes, block design and object assembly). WPPSI-R uses a manipulative coding test called Animal Pegs and provides a copy of Geometric Designs subtest not found on the WISC-III.

The result of a diagnostic evaluation should result in the ability to prescribe remediation. The WPPSI-R, like the WISC-III and other tests that yield subtest scores and patterns, loses its value if the full scale score (or even the performance vs the verbal scores) only is used in making determinations about the child. In order to utilize the information from the subtest scores of the WPPSI, we need to know what type of process or skill the subtest taps, what academic or social situations might be influenced by good performance or poor performance on each subtest, what might be known about how the child learns from his performance, how this knowledge might help him improve performance, and how this knowledge will help in making academics easier for him to handle.

Subtests of the WPPSI-R

Information

Measures: recall of factual information learned by interaction with his world. Though the WPPSI-R incorporates eight (8) of the same questions found on the WISC-III, there are differences in order of presentation and there are new questions.

Check: Is the family verbal? Educated? Interested in the world around them? Of a similar culture and language as the test population? Is the child inquisitive? Does he know something one day, but not the next? Has he had the expected experiences that would lead to acquisition of information?

Suggestions: The child high on information should be good at identifying and labeling objects and pictures (assuming there are no visual perceptual deficits). He would learn from asking questions and being given information verbally. A variety of "Show and Tell" activities would be appropriate for this child. If fluctuating memory is a problem, a diagnostic medical work-up might provide important data.

Vocabulary

Measures: the knowledge of and the ability to express the meaning of words. This subtest of the WPPSI-R has words and format that are basically the same as the WISC-III. The words on the WPPSI are typical nouns, a few action words, and one descriptive word, "polite." Two points are given for a good synonym or an abstraction and one point for a vague or minor fact.

Check: language background. Is the family verbal? Do they speak

with the child a lot? Are there books at home? Is the child read to? Is the vocabulary of the home and neighborhood typical of that used in school? Are the language and culture the same as used in the subtest? Does the child score with quality answers, but knows only so much, or does he know a lot, but can't express himself well or in abstracts? If the score is low, administer the Peabody Picture Vocabulary Test. This will give a comparison of vocabulary knowledge (receptive), when expressing in language is not a factor.

Suggestions: In addition to encouraging verbal interactions, word/object or word/picture experiences should be provided to assure accurate word/meaning associations. When reading to the child, have him sit at your side. Use books with many pictures, and be sure the pictures are accurate, both for visual and for concept clarity. Point to the parts as you read, so the child is getting a clear and complete image of the meaning of each word.

Arithmetic

Measures: readiness for instruction in mathematics as well as the ability to calculate mentally. The subtest presents problems to the child in a picture format before mental math is required. Concepts include bigness, length, most, same, and the child must be able to verbalize the answer to be given credit. At the upper levels of the test, computation is required. Immediate attention and memory may influence this subtest.

Check: Is the child calm and attentive? Impulsive or anxious? Has he had experience with the tasks and the language involved? Are his errors with the language or with the concepts?

Suggestions: Math readiness should be based on real experiences with objects and the environment. Do not use spiritmasters and symbols.

Similarities

Measures: the child's ability to visualize relationships of ideas expressed through language. The first ten items require the child to complete sentences with a related word, e.g., "You ride in a train, and you also ride in a _____." The remaining six items require the child to be able to express in words similarities like, "How are a coat and sweater alike?" Two points are given for an accurate abstraction and one point for a correct concrete similarity.

Check: language and experiential background. Does he ask why? Does he get answers? Is he visually alert to details in his surroundings? Is

everything told to him, or is he encouraged to problem-solve?

Suggestions: Play games, such as "I Spy," to alert him to likeness and difference in his surroundings.

Comprehension

Measures: the child's knowledge about self-care, care of property of others, and awareness of factors in the environment, such as, "Why do houses have windows?" There are questions with social implications at the upper levels about what kind of behavior would be expected in specific situations.

Check: Does he ask why? Is he given reasons? Is he generally considered mature and independent? Is he overprotected? Is he encouraged to make choices?

Suggestions: Encourage him to think about the "why" of what he does. Read together books which have children and animals his age engaging in socially oriented situations. Discuss what is happening or what might happen, et cetera.

Sentences

Measures: the child's ability to hold and repeat verbatim a sentence which is read to him. It requires auditory attention, accuracy of auditory intake, and immediate recall. This is used as a supplementary subtest, not normally used in figuring the IQ. It can be used as an alternative verbal task if one of the other tasks cannot be given or was invalidated. This is a counterpart of the Digit Span subtest of the WISC-III.

Check: auditory acuity, discrimination and attention span. Note the pattern of incorrect responses. Does he retain only first parts heard? Only last parts heard? Does he misinterpret what was heard? Are substitutions meaningful? Does he lose all or most of a sentence, then go on to recall harder ones correctly?

Suggestions: The type help needed would be dependent on the pattern of recall seen. Does he need to have verbiage limited and be trained slowly to increase the span? Or does he need more meaningful content? Or does he need help in more accurate audition?

Picture Arrangement

Is: a subtest in the WISC-III which is important in the sequencing of pictorial experiences. It is not included in the WPPSI-R because of the

sequencing nature of the task, an ability young children generally have not yet developed.

Picture Completion

Measures: detail (visual) noting ability and memory of essential missing elements from common objects (in picture form) familiar to children. There are some items which require analysis from experience, such as a see-saw in a balanced position with a child on one side only, or a swing with a rope without a stopper (knot or stick) under the seat. The items are either right or wrong. This is not a timed test as it is in the WISC-III.

Check: visual skills, experiential background, and a knowledge of the picture context presented.

Suggestions: Wherever you go, talk to the child about what he sees. Make him an alert observer. Play games like "I Spy." Give him many manipulative and building toys. Hands-on visual experiences are needed. During Show and Tell and picture story reading activities, discuss while pointing out different elements that make up the object being viewed. Build with three-dimensional common objects and use and experience things in the environment so that elements are understood, not just viewed.

Geometric Design

Measures: the recognition of form and the correctness and the quality of reproduction of form, both in isolation and those requiring integration of line and form. The copy aspect of the task is more closely related to the Bender Visual Motor Gestalt Test than to any part of the WISC-III. The task is divided into two parts: Visual Recognition/Discrimination for younger children and Drawing of Geometric Figures for older children.

Check: Poor performance might indicate a functional visual or motor factor, or a developmental or neurological deficit related to one or more areas of visual perception. Look at the errors rather than the score. Are they primarily motoric? directional? spatial? result of impulsivity? organizational?

Suggestions: Remediation must be dependent on the area of interference as identified above. Several concepts can be considered basic in developing visual-motor skills in young children. Work should proceed from gross motor to fine motor, at first utilizing the whole body in learning about space, size, and relationships of objects' position-in-space. Work should be done on an upright plane and gradually the drawing and writing

surface should be leveled to a flat plane. Form should be presented in three-dimension, then pictorial, then linear and abstract.

Animal Pegs

Measures: the child's ability to associate a color (peg) with an animal (picture) and to correctly place the pegs in a form board. This is a substitute for the coding task of the WISC-III. Accuracy and the amount of time required to complete the insertions are measured. This test can be readministered, but the second score is not considered in figuring the IQ. However, it could be used to judge the rate of learning of this type task. If Animal Pegs and Geometric Design are both poorly handled, we should expect difficulty with the writing task.

Check: visual skills, especially binocularity, tracking, and accommodation (does he lose his place?). Are his eye-motor coordination and motor control satisfactory and can he integrate the two? Attention? Anxiety? Memory (does he have to keep checking the code; is he accurate when timing is not a factor)? Does he understand the concept?

Suggestions: Depending upon the identified problem, play lots of games that will develop the area which is causing the problem. Separate the areas into training components (visual-motor, visual perceptual, concentration).

Block Design

Measures: analysis and reproduction of abstract designs with blocks. The child is given a 3-dimensional model to copy, getting two points for reproducing it without demonstration and one point if a demonstration is required. A time limit is imposed. The last three designs are done from a linear model. This test of visual analysis has no meaningful clues, but a model is always present to work to. Because it involves organization of stimuli in space, it is related to math ability.

Check: Is the child well coordinated physically (good laterality development)? Is the child ambidexterous? Are his errors details, such as reversed parts? Or does he totally fail to see how the pattern is formed?

Suggestions: If the score is low, this child needs much help in organizing non-meaningful stimuli. He needs a step-by-step process taught, beginning with seeing likenesses and differences in form and directionality in space to identifying elements when presented the whole.

Object Assembly

Measures: ability to perceive and construct from part-to-whole with single familiar objects in puzzle form; timed.

Requires: visual perception of minimal or nonmeaningful parts, perception of the overview from minimal clues, visual-motor coordination and visual acuity.

Check: visual function, awareness of structure of objects and familiarity with the total object pictured.

Influences: ability to use a phonetic analysis approach in learning to read.

Cross Check: parent report of doing puzzles at home.

Compensation: needs a model to which to work and familiarity with the objects.

Mazes

Measures: planning ability and perceptual organization.

Requires: organization and planning ahead, attention, impulse control.

A graph, as done after scoring the WISC-III subtests, should be completed. Several factors then become obvious: How the child works overall in relation to the average range. Do the verbal and visual pathways differ significantly? Is there an excessive inter-test scatter in either area? Are his strengths conceptual or memory? From your answers to these questions, you can make judgments regarding placement, remediation (of deficits), and instruction (through strengths).

FIGURE 11 **Intelligence Evaluation**

Wechsler Preschool & Primary Scale of Intelligence

Name _____ Birthdate _____
C.A. _____ Test Date _____ Ex. _____

<i>Verbal</i>	<i>Performance</i>
Information _____	Picture Completion _____
Comprehension _____	Animal Pegs _____
Arithmetic _____	Geometric Designs _____
Similarities _____	Block Design _____
Vocabulary _____	Object Assembly _____
Sentence Completion _____	Mazes _____

Full Scale IQ: _____

Verbal IQ: _____ Performance IQ: _____

	Inf	Comp	Arith	Sim	Voc	Sent	AP	PC	GD	BD	OA	Mazes
20												
19												
18												
17												
16												
15												
14												
13												
12												
11												
10												
9												
8												
7												
6												
5												
4												
3												
2												
1												
0												

Chapter X

THE WECHSLER ADULT INTELLIGENCE SCALE- REVISED

Individuals above the age of 16 years, 11 months, 30 days are evaluated by the WAIS-R which has been standardized for 16-0 to 74-11 years (ages).

The Wechsler Adult Intelligence Scale (WAIS), originally published in 1955, was revised and a WAIS-R form was released in January, 1981. There were some changes in individual subtest content, as well as some changes in scoring and administration procedures, but the general content was not changed radically. According to the author, the original items were updated, the subgroup representation was more equitably distributed, and some of the less diagnostic items in subtests were eliminated or changed.

The order of administration of the WAIS-R subtests was changed to follow the more effectively administered WISC-III procedure of alternating verbal and performance subtests. This procedure is to help maintain the subject's interest. It is possible to administer only performance subtests for individuals who have an interference in the language area or just the verbal subtests if there is a functional or motorical interference.

However, the administration of the entire battery is needed in order to obtain a profile of the strengths and the weaknesses of the individual. The profile obtained can then be used to look at a person's ability to profit from different types of educational or job-related experiences. The results can be combined with a personality profile and interest inventory in help-

ing choose a vocation .

We agree with others that vocational choices, like educational pursuits, are equally influenced by the learning style of the individual. Both may tap strengths or weaknesses, for example, in perceptual or perceptual-motor skills, in memory, in attention/concentration, or in verbal fluency.

Information

Measures: long term recall of factual data. The items have been updated to include history terms, such as, "Who was president during the Civil War?" and current information, such as identifying Martin Luther King. As with the WISC-III, this subtest is influenced by educational experience. Assuming adequate educational or reading experiences, a low score would suggest poor ability to retain such information. In school this would most likely be seen as poor scores on facts tests and difficulty learning names, dates, geographic locations, vocabulary lists (both in English and other languages), and science terms.

An item analysis may reveal certain patterns, such as missing questions related to history (names and dates) vs distances and measures (digits) vs science content vs geographic awareness. This type of person would be different from the person who knows a little about everything but has a limited amount of overall information.

Check: Is this adult an avid reader or does he seldom read (even newspapers and popular magazines)? Is he a person who follows local and national events? Does he recall places or events which he has actually experienced, but not recall names or phone numbers told to him?

Suggestions: If this subtest is low, and picture completion is higher (visual memory for details), try visual clues to boost language recall.

Digit Span

Measures: the ability to attend to, hold and manipulate digits, first forward, then backward. This subtest is sensitive to anxiety.

Check: The subtest score is not as meaningful as knowing how many digits a person holds forward vs backward and what type of errors are made. Forward repetition does not require manipulation of any of the elements and is usually easier than backward. It is also of importance to know if a person holds well to a certain limit, or does he hold, lose, hold, etc. in an erratic and fluctuating fashion? Does he hold only so much, but accurately? Does he lose the sequence though all the numbers are present?

Anxiety is felt to have a great influence on this subtest, and the testee's current emotional status should be noted before drawing conclusions.

Vocabulary

Measures: not only the understanding of the meaning of words but the ability to verbalize this knowledge. Some of the items on the revised version were changed to eliminate words that had been felt to be too difficult or too complex, and the number of words was shortened. Most of the WAIS-R vocabulary requires richness of experience.

Check: As with the information subtest, this subtest would be influenced by experience or exposure and by the ability to retain what has been learned. Is the testee well read? Does he use (read or speak) these words in his everyday experience? Do his answers reflect that he has a vague idea of the meaning of the words, but not an accurate picture? (He may have heard the word used, but never had the meaning made clear.) Does he seem to know what a word means, but cannot express the knowledge? (Is there a problem in verbal expression or in organizing ideas?)

Check: expressive vs receptive (understanding) language by administering the Peabody Picture Vocabulary Test (2½ years through 40 years of age). Can he correctly identify the meaning of a word (Point to the picture showing . . .) though he had not been able to give a definition for the word?

Suggestions: If low in this area, provide a great many picture/word matches or real experiences coupled with labeling, but do not teach language from lists, by looking at dictionary definitions, or from reading that is not coupled with a prior real experience.

Arithmetic

Measures: mental computation using word problems for which no paper and pencil can be used. Problems range from simple addition and subtraction to percentages and fractions. There is a time limit, and bonus points are given for rapid solutions to the last five problems. This task requires accurate computation after visualizing the process needed.

Check: knowledge of arithmetic processes involved. (The test should not measure arithmetic ability, but uses this format to measure a mental process.) A person may be poor on this subtest and be good with paper and pencil math. If this is so, teach him always to take notes, keep written records, use a calculator, et cetera. Does he lose the details? Ask for repe-

tion? Can't "see" what is needed? Lose attention/concentration?

Suggestions: Improvement in this area would depend upon the specific weakness identified by understanding his approach and his errors. The score obtained is in itself of no specific nor prescriptive value.

Comprehension

Measures: the ability to recognize and explain the reason for social rules and the "why" of common sense situations. Help is given to structure the first answer if needed, and if more than one response is expected, it can be requested. A two point response requires a generalization, one point is given for a concrete or specific detail response.

Check: Is he a verbal person? Well read? Has he had the expected common social experiences or exposure to the concepts included? Does he have vague answers vs incorrect answers vs no knowledge of the question? Does he usually problem-solve? Or does he rely on others to make decisions? Managerial jobs would require a highly developed skill in this area, as would work in social sciences and most professions.

Suggestions: Provide many social and problem-solving stimulating situations. Make cause and effect relationships obvious. Make it a challenge to find relationships. Stimulate a desire to know the "why" of what is seen and experienced.

Similarities

Measures: the ability to conceptualize from language by identifying important relationships. A response is given two points if it is an important generalization or abstraction, and one point if only a concrete or specific detail of a relationship is given.

Check: Is he familiar with the individual items or concepts to be compared? Can he generalize well, but has limited factual knowledge? Or does he generalize poorly, but has some idea about many of the comparisons? If information and vocabulary subtests are very low, this subtest would be affected by a general lack of knowledge, and, therefore, not measure the potential ability to conceptualize.

Suggestions: Direct attention to relationships in a step-bystep growth process. First, teach simple, concrete comparisons (color, size, shape, position, texture, sound, smell), then more generalized comparisons (function, composition, origin).

Picture Completion

Measures: the ability to visually note pertinent missing details about common items found in the environment. This subtest is timed, thus quickness in focusing attention and recognizing the missing element is a factor. If the subject goes overtime on many items, allow him to continue to attempt to identify what is missing. (Do not score as correct, however.) See if timing or actual perceptual inaccuracy is the problem. If low, ask him to verbalize what he is seeing and note if this improves performance.

Check: Experiences, real or pictorial, with the subject matter must be verified for accuracy. Visual skills are needed, specifically the ability to focus on and pull details from a background (figure-ground perception).

Suggestions: Art, arts and crafts, carpentry, and other shop courses can be good ways to increase a person's awareness of the elements of objects in his environment. Seeing (viewing) without handling or discussing the elements does not guarantee that the person sees all the important elements.

Picture Arrangement

Measures: the ability to quickly and accurately make judgments (from a series of pictures) about a sequence of events concerning social situations. This requires experience and involves noting details accurately. This subtest has been updated by including different races and by attempting to eliminate sexism in occupations.

Check: Is this a person who has a lot of social awareness, or does he tend to make social errors? If low, is he "seeing" all of the elements in a situation (figure-ground perception)? Does he have good peripheral vision (to catch what happens in broad view)? Is he nearsighted or farsighted? (His visual style will have an effect on his ability to take in all the elements of a situation accurately.) Does he improve in perceptual (making meaning of what he sees) accuracy if he has been taken through the experience with accompanying verbal explanation?

Suggestions: If he needs to experience to "see" and understand, he should find on-the-job training or lab courses much more profitable than learning from lectures, books, observation, or visual aids that are not hands on.

Block Design

Measures: the ability to analyze and reproduce with blocks an

abstract pattern in linear form. There is a model to work to, but it requires seeing how the whole is built, then reconstructing the whole from the parts. When this subtest is done with ease, the person usually finds mathematical functions easy, is good at bookkeeping and accounting tasks, and may find the computer field is suitable for him.

Check: Are his errors in timing (can he solve, but slowly)? Directional errors? Is there an inability to see what is needed? Does he work in a trial-and-error fashion? Get frustrated?

Suggestions: Teach him to verbalize as he works to help focus visual attention to details. ("The red hand is on top.") Teach him to organize his work by taking out needed pieces first, segmenting parts of the pattern, building from left to right, top to bottom, or build from "easy to see" to "hard to see" parts.

Object Assembly

Measures: the ability to build a gestalt from pieces when the total form is known, but the pieces are basically non-meaningful. It is a timed test, and credit is given for partial solutions. All four items are given, with no cutoff criterion as in other subtests. Bonus points are given for quick, accurate solutions.

Check: The score is not as revealing as the errors. How is his eye-motor coordination? (Does he lose time because of trouble handling the pieces? What is his perceptual (note type of errors) style? Does he work entirely by trial-and-error? Does he solve correctly, but slowly, or not solve correctly?

Suggestions: As with the Block Design subtest, this person needs to learn to organize his approach and his materials before he starts and during the task.

Digit Symbol

The term "digit symbol" is substituted for the term "coding" used on the WISC-III. The format is the same though the symbols differ. This test measures the ability to copy coded symbols assigned to unordered digits, using a visual key for the decoding process. A point is given for each correct symbol done in presented sequence. The timing differs from the WISC-III in that only 90 seconds are allowed for the task. Both speed and accuracy are measured.

Check: visual function, especially binocular vision and movement, visual-motor coordination, attention, memory and speed vs accuracy. This

task is sensitive to anxiety.

After the task, ask the testee to reproduce the symbols for each number, in order, from immediate memory. This is not part of the regular test procedure, but has been found to be helpful in looking at the strength of immediate motor memory.

Suggestions: Improvement in this area would depend upon the problem area (motor, visual, attention, perception, anxiety). Thus, again, the score is not prescriptively helpful, but analysis of errors AFTER observation of approach is essential.

FIGURE 12
Intelligence Evaluation

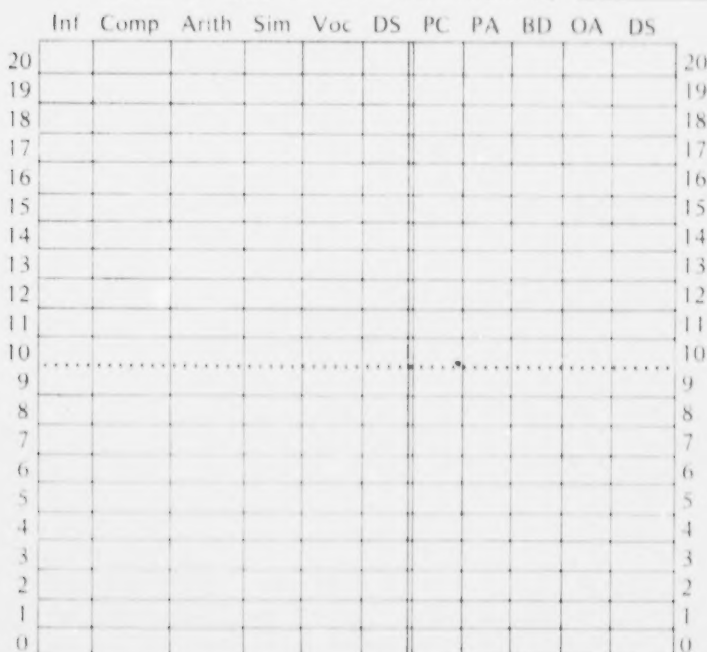
Wechsler Intelligence Scale for Adults - Revised

Name _____ Birthdate _____
C.A. _____ Test Date _____ Ex. _____

<i>Verbal</i>	<i>Performance</i>
Information _____	Picture Completion _____
Comprehension _____	Picture Arrangement _____
Arithmetic _____	Block Design _____
Similarities _____	Object Assembly _____
Vocabulary _____	Digit Symbol _____
Digit Span _____	Mazes _____

Full Scale IQ: _____

Verbal IQ: _____ Performance IQ: _____



Chapter XI

MATCHING VERBAL AND VISUAL

Over half of the child's day is spent listening to instructions, gaining information through auditorily oriented exposure, communicating through oral exchange, and showing the extent of his knowledge through verbal expression. Before we can use language effectively, we must be able to give the names for objects and experiences in our environment. Encoding, or attaching a symbol (a word) to the object, may involve several factors.

Auditory memory has most often been pointed to as the major weakness affecting language development, and for many years visual associative methods have been used to boost word recall. However, one of the little recognized interfering factors is a visual-perceptual deficit (i.e., a deficit in making meaning from visual stimulus). Because of less-than-accurate visual perception, many auditory-visual mismatches occur and language development is affected.

We learn words initially as labels for three-dimensional objects, then for pictures and for abstracts or concepts in our world. If we are not able to recognize and organize the visually oriented world, we cannot be expected to attach labels to it with accuracy and may be regarded as having a "language disability."

Vocabulary training and conventional methods for language development have often failed to effect the changes and development desired. This failure may be because of the unrecognized visual perceptual deficit which could lie behind the language disability. When training is initiated

which is oriented to the development of visual perception and accurate auditory-visual matching, the child will often be seen to make significant gains in learning.

Manipulative experiences in learning and in the use of words is therefore essential. The visual clue in picture form can be used if the perceptual deficit is not interrupting the perception of linear stimuli. Visual-perceptual training is essential so that when the child must work in the two-dimensional level he can make the transfer.

Recall of labels does not, of course, imply that communication will be adequate for the learning process. Many children show high vocabulary scores and can do well on comprehension tests which require rote responses from factual data, but fail when inference or reverb-alization of content is required. Can these children use language in communication? Do they receive an accurate visualization? Can they organize data presented orally or in written form?

Visualization, or the ability to "see" a mental picture from language can be simply described as getting an accurate mental image from the words used. Among a group of listeners, the visualization of each may be often vague and dissimilar, depending upon factors such as the clarity of the speaker's word choice, the background or frame of reference of the listener for the subject heard, and the extent of previous experience with the words being used. For example, "I saw a cat" might stimulate in the mind a picture of a common house cat sound asleep on the bed, of an alley cat roaming back alleys, or of a wild jungle cat. The personal interpretation might include the other salient details that the mental picture creates and might set the scene for further data intake. If the words include more specifics such as "I saw a black cat under the ladder," the specifics of the color of the cat and its location in a setting must be given correctly for complete, accurate visualization. Without accurate and adequate visualization, the listener's memory of each speaker's verbalization will vary, and conclusions or inferences drawn from the total listening experience will likewise vary.

With more complex or less concrete language, the listener (or reader) requires understanding of the implications of the language before he can react without being considered incorrect or "just not listening."

It is important to find the open pathway or the learning strength of each child. Some will learn most easily and accurately with auditory presentation and reinforcement; others cannot hold or visualize from oral presentation, but must have their language training presented with static visual models to enhance recall; still others may need manipulative, three dimensional experiences before they can accurately visualize labels and

the meaning of words.

Conversely, the child who fails to develop accurate language recall because of inaccurate visual perceptions affecting auditory-visual matching will not improve unless the perceptual deficit is given priority in programming.

General suggestions for teaching language should include:

1. Introduce a word in isolation and IMMEDIATELY reinforce in context.
2. SIMULTANEOUSLY provide the spoken word (and the written word if the child is ready for this level) and the experience or object it represents.
3. First associate words with their CONCRETE or manipulative counterpart, *then* move to the pictorial, two-dimensional representation.
4. ALWAYS teach words with a *visual referent*.
5. Begin with PERSONAL experiences, move to common daily associations, and lastly, approach the abstract and nonpersonal environment.
6. Provide numerous and varied experiences to establish BROAD APPLICATION for words.
7. Teach words as CONCEPTS, not just as labels.

The benefit of auditory-visual matching is seen with all types of learners but appears to be essential for the Fragile Child, (Pattern 3, Chapter VIII).

Chapter XII

BEHAVIOR AND LEARNING STYLES

Many learning-disabled children have trouble with the perception of social situations in which they constantly find themselves. When we speak of acceptable behavior for a situation, we assume awareness of a framework (boundaries within which we can operate) and a knowledge of the rules for working within this framework. The better we know the rules and can see how and when they apply to a situation, the more able we are to move freely within the social framework and be socially adept: to know just how far we can go without incurring social displeasure. The same perceptual deficits which affected the learned-disabled child's ability to attend to certain stimuli with symbols can affect his ability to note the details and innuendoes of a social situation.

Let us look at two types of children—the Fragile Child and the Vulnerable Child—and see how their perceptual deficits affect their social adjustment.

The Fragile Child often has trouble seeing a situation clearly and cannot always pull out the pertinent details (the specific expected behavior) that apply to a given situation. She has the details, but does not see the overview or their relationship. She thus accepts rules because she has been told what is expected of her, although she may not see the reason for the specifics of behavior, and so cannot make judgments in a new but similar situation. Depending on past experiences and her ego strength, such a child may begin to restrict her movements so that she will not accidentally keep moving across the acceptable boundaries of behavior. For example, in a restaurant the Fragile Child might refuse a delicious item saying "I

don't care for any," when in reality she fears she does not know how to eat it. She may not, of course, be fully experiencing or enjoying life; but to her this may be safer than making unexpected social errors. This child is seen as quiet and unassuming. She avoids social problems by not doing much at all. She needs encouragement and carefully structured successful situations to help her enjoy more experiences.

The Vulnerable Child is often unaware. He may be so tuned out that, even though he knows the rules and can see the structure, he is constantly bounding around both within and across the framework. Such a child may be totally unaware as he drinks his soup from the cup instead of using a spoon. When made aware, he honestly intends not to let it happen next time; yet again and again he will cross the boundaries, unaware that he has "done it again." Social know-how does not come to him by observation; he must be specifically taught and tuned in until familiarity helps him respond automatically with the acceptable behavior. Above all, don't try to teach him by telling him; he must *experience* to learn.

In peer relations, too, we see differences among our learning disabled children. Parents of the Vulnerable Child ask: "My child always wants to play with younger children. Should I allow this?" As we have already seen, he is immature in his visual-motor development. This same developmental lag is seen in his interests. Observation shows his interests to be those of a child approximately two years younger. Thus, the answer to the question is, "Yes, let him seek his own level. He is simply developing more slowly in some areas. If he is forced to play with his peer group, he will be less satisfied with himself as well as with his friends."

On the other hand, many parents of the Fragile Child report that: "She wants to do what she wants to do when she wants to do it, but she is the leader of her peer group." Yes, she is a leader; she is the boss. Hers is not a developmental lag nor an immaturity, but a communication deficit. She will bicker, dictate, and insist, or she won't play. Her strong-mindedness attracts followers, and all is well as long as she does not encounter another "leader." This child does not join her peers in organized activities, sports, scouts, or camp because she would have to do what others tell her to do.

The Vulnerable Child enjoys peer relations and social activities, but he becomes overstimulated very easily and as a result can become wild and has to be "unwound." Because he is also hyperkinetic (and needs to touch everything with which he comes in contact), he makes his contacts with his peers on a physical basis. And because he is unaware of his own strength, teachers or other parents may complain that he is too rough or mean to his friends. He is not aware that he is touching, and hence cannot

understand. Camp or a carefully structured day is important for the Vulnerable Child. If his day is planned and filled with appropriate and supervised activities, his energies and interests can be directed for success. Left to play as he wishes, his tractability and hyperactivity unchanneled, he can become wild and unhappy quickly.

The Enchanted Prince, because he cannot handle academic skills, is often misdiagnosed as a retarded child, and is frequently rejected by his peers or by other parents. Because of this, he is not stimulated to emotional growth, but may come to think of himself as retarded. When he is given a chance to relate with his peers, he will hold his own and be able to participate in all but academic endeavors. However, he frequently cannot understand the subtleties and implications of a new activity, so it is best to teach him games and rules before suggesting he join his friends.

The preceding suggests why identifying the *specifics* of a learning disability can be an important step toward understanding, adjustment, and success. "Learning disability" is a label which refers to children sharing the same general symptoms. Their problems may be seen as behavioral or motivational rather than educational. Even when the problem is recognized as a specific disability we must ask, "What does this label tell us about this child that will give us the prescription for teaching him, for home management, or for remediation?"

How can we expect to treat a child with a learning disability by the label alone? We must look at his specific pattern of behavior; we must investigate the learning pathways to identify his strengths as well as his weaknesses; and we must check all the functional, developmental, and environmental aspects of the child. By understanding his needs and his manner of learning, we *can* lead him to greater success.

Chapter XIII

PERSONALITY, LEARNING STYLE, AND TYPOLOGY

Robert Stephanos

In Western psychology, assessment procedures have tended to rely on correlational or factor-analytic techniques, with the subsequent development of a raft of test batteries yielding "scores." These correlations are then assessed as to the origin of the "factors" and psychologically interpreted. Most "types," "traits," and other formal categories used to generalize about individuals are, unfortunately, too often used as labels. These labels are then "stamped" indelibly onto individuals as one stamps USDA on a side of beef. This use of "labels" is an extreme one and is more often employed to prevent the acquisition of knowledge than to prevent abuses; it should not be tolerated.

Western psychology also includes the experimental approach, which studies the effects upon patterns of practice, the role of transfer, individual differences in problem-solving styles, learning sets, and cognitive strategies.

With the advent of behaviorally oriented studies, factorial psychology has been somewhat shoved aside, although its theoretical assumptions continue to underlie most test-score interpretive material.

The dichotomy between these philosophical positions can be seen most clearly in education, where the "selective system," based on standardized, norm-referenced tests, is opposed to the "adaptive system." The former system, depending as it does on factorial psychology, utilizes

achievement tests that have been

developed with a general content area in mind.... Items are selected which have high discriminating power. The intent is a psychometric one: to rank people and to discriminate maximally among them. Additionally, the raw scores are converted into relative scores whereby the test taker is compared to the norm group for the test (Haile 1977).

The latter system is characterized by the type of assistance given students to facilitate their learning Each person has a preferred style of processing the stream of information that his or her senses detect. Each individual has a particular way of perceiving and organizing the environment.... Knowledge... [is] a product of an intersection of the individual with the environment Student abilities such as cognitive style (impulsive versus reflective), reward preference (affiliation versus external) need to be assessed (Haile 1977).

There is room for both approaches in the assessment of personality in the learning process, and a view which to some extent combines both (although behavioral considerations are given more prominence) is offered by M. B. Rosenberg in his book, *Diagnostic Teaching* (1968) . Rosenberg's typologies combine the factorial and behavioral approaches; the results have practical application for the classroom teacher. *Typology* is a dynamic concept which suggests that changes in an individual's nervous activity result from developmental interaction with the environment. Rosenberg found that there are essentially four "learning styles" exhibited in the behavior of children during the learning process: (1) creative, (2) acceptance-anxious, (3) undisciplined, and (4) rigid-inhibited.

He also found that for each of these types there is a varying effectiveness in learning skills: attention, motor, visual-receptive, auditory-receptive, conceptual, and automatic skills. For example:

One child may have all the learning skills for learning but not be able to learn because his style prevents him from fully utilizing the skills. Another child may have a learning style that enables him to effectively utilize what skills he has but he may be deficient in the development of key skills. This student would also exhibit problems, but his problems would be different from those exhibited by the child with an ineffective style (Rosenberg 1968).

Rosenberg refers to an individual's learning style as his "pattern of behavior when confronted with a problem." This pattern is modal, is ascertained by a number of different problem situations, and is dependent "upon two dimensions of his information-processing ability; locus of information and level of symbolization."

These abilities are important, writes Rosenberg, because, "Within each of the four styles, a continuum of adaptive to maladaptive behavior is postulated." Effectiveness in using one style rather than another depends on the learner's information-processing abilities. Hence, there may be two learners with a similar learning style, but with differing degrees of effectiveness within that style. See Figure 13, page 84, and Figure 14, page 85.

Learners with a "creative" style have modal patterns balanced in all areas. Also their intra-extrapersonal information processes and their concrete-abstract symbolization abilities are at high levels and are equally effective.

Intra-extrapersonal information processes refers to

the degree to which a learner is open to receiving information from two sources: information from within himself and information from outside himself The first is the very personal, intimate inner world of our thoughts, feelings, impulses, and beliefs . . . the intrapersonal world The second consists of our external environment, other people, objects, events, and social institutions ... the extrapersonal world To be an effective learner or problem-solver . . . one must be maximally open to receiving information from both the intrapersonal and the extrapersonal world (Rosenberg 1968).

Concrete-abstract symbolization abilities (or level of symbolization)

refers to the level of abstraction with which the learner is able to symbolically manage information in a problem-solving situation. At one end of this dimension would be a learner who symbolically integrates information in a concrete manner. He is stimulus-bound, unable to provide symbolic labels which would enable him to operate beyond his immediate sensory experiences. At the other end of this dimension would be a learner who is able to consistently integrate his world in an abstract manner (Rosenberg, 1968).

In classroom behavioral terms, the learning styles of children are exhibited through specific response patterns. *Creative*: open to new ideas, persistent, constructive. *Acceptance-anxious*: tries too hard, shows-off,

FIGURE 13
Information Utilization

Example of two learners with a similar style (undisciplined) but differing degrees of effectiveness within the style.

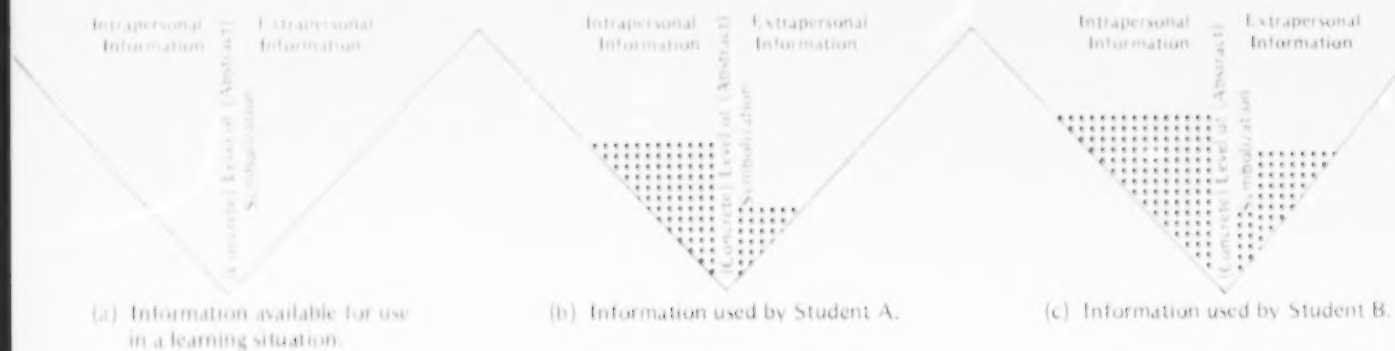
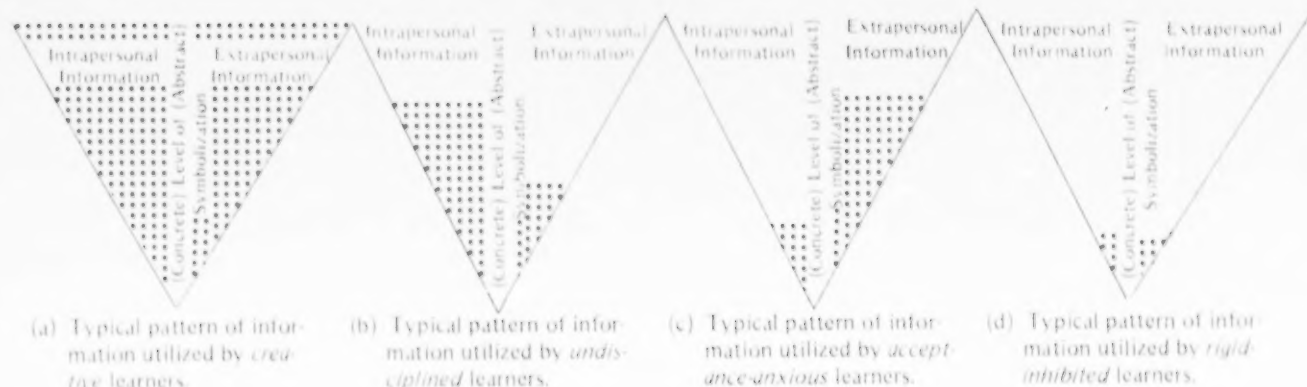


FIGURE 14
Information Utilization According to Learning Style



overly sensitive to correction. *Undisciplined*: negativistic, defiant, temper tantrum prone. *Rigid-inhibited*: cannot get job done, oblivious, easily confused.

From experimental evidence (Gray 1964) we know that the weaker the nervous system, the more intense the excitatory process which is set up by a given physical stimulus.* Said the other way, individuals with strong nervous systems respond to stimulation with weaker excitatory processes.

If, for example, a child possesses a weak nervous system, more than likely he will display an acceptance-anxious or a rigid-inhibited learning style. This type of child will drowse, sit passively and cause no difficulty, or will be overly dependent upon the teacher. He will learn little since he initiates very little interaction with his environment and its elements, except for gratification of needs. Such a child—who is most often ignored by teachers—must be taught with stimuli of low intensity. The *salience* of the cues in a stimulus complex should be high and carefully manipulated.

The educator, therefore, must be sensitive to a student's typology and learning style when presenting learning material. Ideally, both the manner of presentation and content should vary according to the student's style. The child's learning style can be an easy and an effective behavioral cue for the teacher. Possibly even more important, the teacher now has a solid neurophysiological frame of reference from which to view the child, instead of merely labeling him as "lazy," "sick," or "slow."

*Gray refers to "strengths" of nervous system functioning, i.e., specific properties of excitation/inhibition processes: equilibrium, strengths, and mobility in the formation of conditioned responses.

Chapter XIV

A MOTHER'S REFLECTIONS

Ann Murray

Scott's birth followed an easy and unremarkable pregnancy and quick delivery. He weighed a little over eight pounds, and was a good looking baby with a mild disposition. I recall no problems during his early months, although he was a somewhat lazy nurser and never liked milk too well. I gave him solid food early, and he had a large appetite.

At seven months he fell down the basement stairs; someone had left the door ajar and he found it. He was hospitalized for a fracture of the left femur. (At that time the hospital kept parents out of their child's hospital room since they felt their coming and going was too upsetting to the infant.) Scott was in traction for three weeks in the hospital, then in a body cast at home for six weeks. He was an absolute angel while in the cast. Even with this setback, he was walking by 14 months. He seemed to me to be a perfect child until he reached two.

By the age of two, Scott was very active and seemed to resist all forms of discipline. He was into everything and liked to take things apart. In fact, his favorite pastime was dismantling the old clocks and radios that his grandmother and neighbors saved for him.

We had a swimming pool from the time Scott was two until he was five, but he didn't like the water. Before he was willing to get in the water, Scott spent two or three weeks sitting on the side of the pool watching other boys learn to swim. He finally got in, but he didn't really get interested in the water for several years. Later, we were to relate this fear to poor body awareness and fear of the unknown. A lack of rhythm sense also was

a factor.

When Scott was three, my father told me that in all his 50 years of teaching and administrating in schools, he had known only one other boy who resisted discipline like Scott! I can still remember what a failure as a mother I felt.

When Scott was four, his nursery school teacher said she was glad to meet me because she was beginning to wonder what type of home Scott came from. He wouldn't do anything she asked (sit in his chair, say good morning when he entered the room, stand in line to go on the playground, etc.).

During his kindergarten year, Scott never wanted to go away from home, not even for his friends' birthday parties. One time we got all the way to the party and rang the door bell, then he refused to go in. Looking back, I believe he needed the security of the known.

On the first day of first grade, he actually left his classroom and walked home (a long walk), and he never really liked school. His first grade teacher was young and sympathetic and reported he "certainly is all boy, but he will get along." Concerned, I talked to our pediatrician about his "hyperactivity." He, too, explained it by saying, "He's all boy."

As a young child, Scott had pneumonia once, frequent throat infections, headaches (migraine?), red eyes, and a hoarse voice. His tonsils and adenoids were removed at the age of 16.

When Scott was about eight, he wanted to take piano lessons. His teacher worked with him for six months before he realized that Scott had not learned one note, but was playing by memorizing the fingering. Eventually he learned to play by ear.

On the ball field Scott was a natural athlete, but he fooled around in practice. He never liked to practice anything and, therefore, didn't like organized sports in general, though he did participate.

Each year of elementary school was pretty much the same for Scott. He spent more time sitting in the hallway than in the classroom. Teachers' comments were usually consistent: can't sit still; fools around; won't complete his work. His academic performance fluctuated from Ds to As. Most conferences were called by me; no one had any suggestions on how to help him; everyone always said he was bright, but just wouldn't try—except when a project caught his fancy.

I remember sending him to his room one time because of a rule infraction. When he called me to his room an hour later, I was expecting him to ask if he could come out. Instead, he just wanted me to see his latest creation—an elaborate pulley system whereby he could lie in bed and turn off his light switch across the room without getting up!

Despite the fact that Scott was ingenious, artistic, enthusiastic, affectionate, generous, and helpful (when in the mood), most of his middle childhood years were agonizing. We had very little direction or help, and I constantly searched unsuccessfully for a way to "discipline" Scott. Much of the time I wondered why I was such a failure with him, when I had no such problems with our other four children.

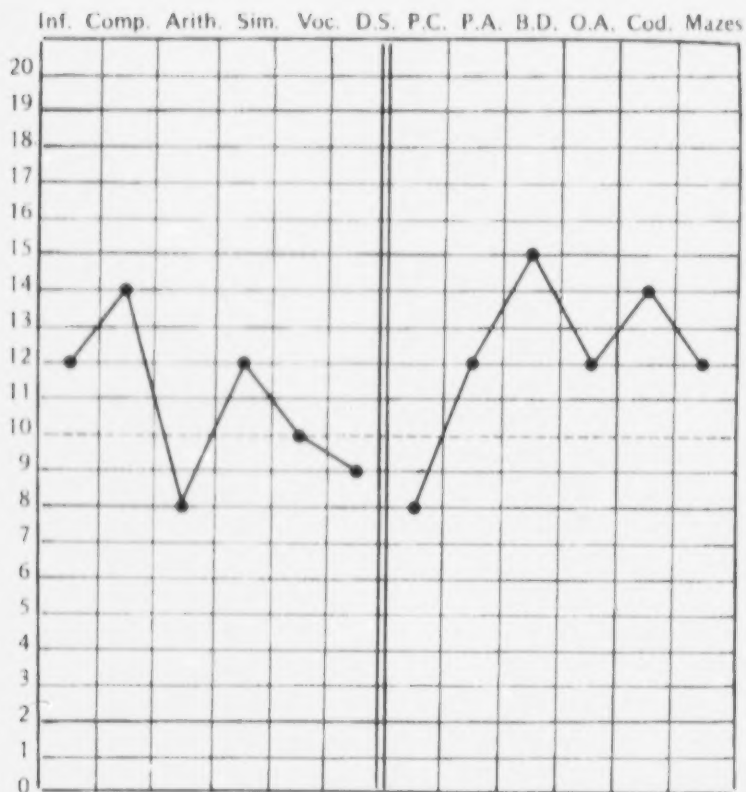
Scott was 21 when I started writing this history. I asked for his remembrances of school. His immediate comment was, "I always did funny and dumb stuff. I liked physical education, but I never really liked school."

When Scott was going into tenth grade, I began to work at an educational guidance service and became aware for the first time of the work being done in identifying learning styles.

Scott was given a battery of tests which placed his reading comprehension at the eighth-grade level and vocabulary knowledge at the sixth-grade level. No wonder reading as a study aid had been so unprofitable. He was then administered the *Wechsler Intelligence Scale for Children* (See Figure 15). Overall he scored in the average range, but there was a ten-point difference between his overall verbal and overall performance skills, and, more significantly, there was a six- to seven-point difference within each scale. With such a fluctuation in his learning style, no wonder there was fluctuation in his achievement and daily output! When I asked Scott why he was turned off by school, he said, "Sometimes I tried, and *really* tried, and still did poorly, so I'd just give up." I began to suspect that the classes in which Scott had done well and had enjoyed were taught by teachers who used techniques and methods that tapped into his learning strengths.

Specifically, Scott was well above average in social awareness (Comprehension 14), accounting for his alert personality and salesmanship ability. He was above average in his ability to analyze visually static data, especially if he could manipulate the material (Performance IQ 115). (That explained why he actually had to work on the part of the car he was trying to fix before he could interpret the manual at his side. After he did it once, he never forgot, and he came to be a good mechanic.) He was below the average range in noting details visually (P.C. 8), and his attention to immediate auditory stimulus was weak (D.S. 9). (That helped me understand why he forgot to turn out the light even though I had just reminded him. His long-term memory was good, however, explaining why he seldom forgot what he once learned (Inf. 12). With this testing, we became less anxious about explaining his problems and focused more on his academic ups and downs and how they reflected his learning style. He received some

FIGURE 15
Scott's WISC-R Profile



Overall, Scott works at the above-average range of intelligence (111 full-scale IQ), and conventional interpretation of that score would lead parents and teachers to expect above-average grades from Scott in all subjects.

The pattern formed by the subtests, however, shows distinct strengths and weaknesses. At a glance we can see that, overall, the verbal learning area is not as strong as work with static visual presentation (verbal IQ 105, performance IQ 115).

In addition, we see that there is a statistically significant six-point difference between strengths and weaknesses in both areas.

Verbally, Scott is able to hold a large amount of data (Information), to conceptualize from words (Similarities), and is especially good understanding social implications (Comprehension). On the other hand, concentration and immediate manipulation of auditorily presented data is poor (Arithmetic and Digit Span). Thus, though Scott can learn from verbal communication, the attention factor requires that he use some form of note-taking, such as a tape recorder, that allows him to review a lecture at his leisure and to repeat a lesson until he has gotten all the pieces.

Visual analysis of his environment (Picture Arrangement) and of abstracts (Block Design) is excellent; yet he misses details (Picture Completion) and would, thus, be considered a "careless" worker in school.

This pattern points to the need for static visual presentation and experiences (lab courses vs. lecture or textbook work) to help recall and accuracy with details. Although understanding and conceptualization are good, his weaker recall ability (or test behavior) would not reflect this fact.

counseling and training in how to tap his strengths by using concrete and manipulative materials.

Scott's difficulty with auditory concentration continued; he could not take notes and follow lectures effectively (Arith. 8). An electroencephalogram showed a dysfunction in the associative language area of Scott's brain. Now another piece was added to the puzzle, explaining why vocabulary memory and auditory intake remained difficult, though his long-term memory for general information was often good.

During the next few years Scott began to realize some successes. The latter part of his senior year Scott worked at the airport, on- and off-loading baggage for charters and nonscheduled airlines. He was a terrific loader—quick and efficient—and could get more luggage in a small space than I would have thought possible. Following graduation, he was a group leader for the local parks and recreation summer program, working with the boys six and seven years of age. Since he was very good with children, it seemed an ideal job, but he did not want to continue. After the season was over, he spent his earnings on a bright red jazzy car. To pay for its upkeep and insurance, he returned briefly to the airport job, then quit.

Scott tried several more jobs, but became disenchanted with each one and quit. Finally, he applied and was accepted for training as an installer for the telephone company. The training tapped his strength with visual-manipulative skills, and he scored second highest on the final exam. He was very quick and efficient. He could climb to the top of the high poles easily. His confidence in himself returned. After being out of school

two years, he decided to take one college course to see how well he liked it. Spurred on by a B grade, he tried another course. When this went well, he decided that he would try to combine school and work. He began taking a business administration course toward an AA degree from a junior college. The last semester there he made the Dean's List.

After a lifetime of frustration, criticism, punishment, and many escapades, Scott has emerged an enthusiastic, cooperative, hard-working, lovable young man. During a recent conversation, Scott talked about his learning disability and explained that he was beginning to understand how to choose courses, and how to study. Best of all, he believes in himself.

Through the tumult of the years, I felt frustrated as a mother because the approach I used with my other children did not work with Scott. I had an intuitive feeling that there should be something I could do to help him. Not knowing what to do, I felt a failure as a mother.

I wish I had known earlier what I now know about learning disabilities. I could have helped Scott more and saved us both a great deal of anxiety, criticism, and tears.

Scott still has a lot to learn. He's still going to school (at a state university), and it still isn't easy for him. He has, however, come a long, long way.

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